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THE

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FOR APRIL 1862.

ART. I.—*On the Distinctive Characters of the Pulmonary Signs obtained by Percussion and Auscultation.* By AUSTIN FLINT, M. D., Professor of the Principles and Practice of Medicine in the Bellevue Hospital Medical College, and in the Long Island College Hospital.

WHAT requirements are needed to carry, as near as possible, to perfection the methods of physical exploration, the successful application of which to the diagnosis of diseases of the chest is to be dated from the labours of the immortal Laennec? This question will serve to open up, quickly, the field of inquiry, which it is the purpose of this article to survey. A little deliberation will, we think, render it clear that the requirements for the object stated are embraced in four divisions.

The *first* requirement is an acquaintance with all the signs which exist. None must remain to be discovered. Here is especially apparent the astonishing success of the labours of Laennec. He ascertained the greater part of the signs relating to the pulmonary system, which are now known to exist, leaving but few to be discovered by those who have followed in his footsteps. We cannot say that no new signs are to be hereafter added to the list of those already known. Continued observation, with improved means of exploration, may develop sounds which have so far escaped detection; but certainly much is not to be hoped for in this direction.

The *second* requirement is a full comprehension of the significance of each sign. Each sign has a definite signification; it represents some special abnormal physical condition. Now, our knowledge of auscultation and percussion cannot approach perfection, until the precise meaning of each sign be known. Here, too, the labours of Laennec were successful in an astonishing degree. Clinical observers, since his time, have not found very much to alter or modify, as regards the import of the signs which he pointed out.

A *third* requirement is understanding of the mechanism of all the signs. We could hardly declare our knowledge of auscultation and percussion to be as near as possible to perfection, if we were unable to explain the manner in which the signs are produced. Yet, it is to be always borne in mind that it is by no means necessary to understand the mechanism of the signs, in order to know fully their significance and value. We know that each sign represents a certain physical condition, simply because clinical observation and examinations after death have established the fact that the sign and the physical condition are constantly associated, the former being never present without the latter. It is not enough to argue from a sign that a certain physical condition must co-exist, or from a given physical condition, that it ought to give rise to such a sign. Dependence on this *à priori* reasoning cannot fail to lead to error. Even Laennec, with his cautious and logical mind, did not altogether escape error from this source, and it is easy to see that later observers have erred in a similar way. Thus, it is only by supposing the mind to have been influenced by the manner of explaining the crepitant rale, that a justly distinguished author has been led to state that this sign may be present in the act of expiration, as well as in inspiration, and that another author says it is oftener heard in the *second* than in the first stage of pneumonia. It could have been only from a bias derived from the conviction that a pulmonary cavity must give rise to pectoriloquy, that Laennec was betrayed into the absurdity of describing a variety of this sign under the name of doubtful pectoriloquy. In general, however, we believe the explanations of the signs, as given by Laennec, to be correct, and with regard to some important signs, *e. g.*, bronchial respiration and bronchophony, the recent attempts to explain the mechanism of their production differently, seem to us to lead backward, rather than advance our knowledge of the subject.

A *fourth* requirement is information, complete and accurate, concerning the distinctive characters which belong to all the signs respectively. Here Laennec accomplished vastly less than in the preceding divisions. Here, too, the labours of others have left a far larger scope for advancement, than with respect to the discovery of new signs, the connection between signs and physical conditions, and the explanation of the mechanism of signs. It is not to be wondered at that Laennec devoted so little attention to the distinctive characters of signs. The great objects with him were to discover signs, and to determine their significance. It was enough for him that he himself recognized the different signs, and that he was able to point them out to others. He had not time to inquire into the elements which enter into the various sounds obtained by percussion and auscultation, and the importance of this analytical inquiry has not sufficiently impressed itself on the minds of others. It is curious to observe how meagre are the descriptions of the signs in the great work of the illustrious discoverer of auscultation. Thus, in describing the bronchial respiration, as

heard over the larynx, trachea, and bronchi, he contents himself with saying as follow: "*Ce bruit a un caractère tout-a-fait particulier; le murmure respiratoire, surtout dans l'inspiration, est dépourvu de la légère crêpitation qui accompagne le développement des cellules aériennes; il est plus sec en quelque sort, et l'on sent distinctement que l'air passe dans un espace vide et assez vaste.*" So, with regard to the normal vesicular breathing, he is satisfied to describe it in these terms: "*Ce murmure peut-être comparé à celui d'un soufflet dont la soupape ne ferait aucun bruit, ou mieux encore à celui que fait entendre à l'oreille nue un homme qui, pendant un sommeil profond, mais paisible, fait de temps en temps une grand inspiration.*" Laennec overlooked, in a great measure, the expiratory sounds, although these furnish the most distinctive of the characters pertaining to the bronchial and cavernous respirations.

Others have contributed to supply these deficiencies of Laennec, but we have long entertained the belief that here is the great defect in the manner in which the physical exploration of the chest has generally been presented by writers and oral teachers. The distinctive characters of well-known signs have not been studied with sufficient thoroughness and minuteness. Hence, the different signs are by many imperfectly understood, not readily discriminated in practice, and often confounded. If we are not mistaken, it is because the characters, by means of which morbid signs are to be distinguished from each other, and from the signs of health, have not been adequately studied, that there are so many mere smatterers in physical exploration, and that so large a portion of the profession bestow little or no attention on the subject. It is with these views that we propose, in this article, to consider the sources whence are derived the distinctive characters of the signs obtained by percussion and auscultation, and to ask the attention of the reader to the practical advantages of an extension of our knowledge in this direction.

Most of the pulmonary signs obtained by percussion and auscultation may properly be called *sounds*, or, at all events, they may be discriminated by the same means by which different sounds are distinguished from each other. Now, what are the elements entering into different sounds, and investing them with distinctive characters, by which they are practically distinguished from each other? One element is *intensity*. Sounds differ as regards mere loudness. This is sufficiently simple. Another element is *pitch*. Sounds differ as regards their relative situation in the diatonic scale; in other words, they are high or low, acute or grave sounds. In the discrimination of the pulmonary signs obtained by percussion and auscultation, characters derived from variations in pitch are of the greatest importance. To these characters especially we would ask the reader's attention. We hope we do not commit an indelicacy in expressing the belief that certain distinctions based on this element, which we claim as original, will be found to be of great value in their practical applications. Another

element is *quality*. This is a highly important element. Sounds emanating from different sources are distinguished mainly by differences as regards quality. We recognize without difficulty tones produced by different musical instruments, although the instruments are unseen, provided we are familiar with the tones which the instruments produce. The element in these tones, by means of which we distinguish them, is not intensity, nor is it pitch; the recognition is equally easy whether the tones are loud or feeble, or whether they are high or low. It is the quality of sound which characterizes each musical instrument, and, in like manner, particular sounds which are not musical.

These three elements—viz., intensity, pitch, and quality—enter into the sounds obtained by percussion and auscultation. Like other sounds, they are to be discriminated by distinctions based on differences as regards these elements. It is only by basing their distinctive characters on distinctions relating to intensity, pitch, and quality (more especially the two latter), that our knowledge of them, as signs, is rendered accurate, complete, and easily acquired. Other points of difference, it is true, are involved. The rhythmical succession of the sounds produced by the inspiratory and expiratory acts, and the relative duration of the sounds produced by these two acts, furnish important characters pertaining to certain signs. But, exclusive of these points, the different pulmonary signs obtained by percussion and auscultation are to be distinguished from each other by differences relating to intensity, pitch, and quality of sound.

The more important of the morbid pulmonary signs obtained by percussion and auscultation being not newly developed or adventitious, but abnormal modifications of normal sounds, their distinctive characters, of course, are to be determined by taking the latter as the standard for comparison. Hence, the normal sounds are to be first analyzed, and their characters ascertained. Subjecting to this analytical process the resonance produced by percussion upon the healthy chest, we ascertain it to be a sound varying in intensity accordingly as the blows are strong or weak, but varying, in this regard, in different persons, irrespective of the force of the percussion. We find it to be a low-pitched sound in comparison with the abnormal modifications of the sound. It has a quality, *sui generis*, as peculiar to the healthy chest as the notes of the violin, for example, are peculiar to that instrument. We designate this indescribable quality *vesicular*, and introduce this name in the title of the normal sound when we call it the "*normal vesicular resonance.*" In like manner we analyze the murmur heard in auscultating the healthy chest, and we ascertain that this murmur consists of a sound with the act of inspiration, and a sound, usually, with the act of expiration, and that both the inspiratory and expiratory sound varies, as regards intensity, in different persons. We find that the inspiratory sound is low in pitch, as compared with the abnormal modifications; and that it has a certain quality which is *sui generis*, and as peculiar

to the healthy murmur of respiration as the note of any musical instrument is peculiar to that instrument. We designate this quality vesicular, and introduce this name in the title of the normal respiration when we call it the "*normal vesicular murmur.*" We find, also, that the expiratory sound is much shorter, less intense, lower in pitch than the inspiratory sound, and that it is devoid of that peculiar quality styled vesicular. Having thus ascertained the characters belonging to the normal vesicular resonance and the normal vesicular respiration, we are prepared to analyze and compare the abnormal modifications, and determine their distinctive characters. We will first direct attention to signs obtained by percussion, and next to those obtained by auscultation.

All will admit that, in the arrangement and naming of physical signs, the utmost simplification, compatible with clearness and completeness, is desirable. As regards the signs obtained by percussion, they may be reduced to four. Certainly this is bringing the subject into a small compass. Of these four signs, one is *flatness*. This sign has but a single character, and that is sufficiently distinctive, viz., absence of all resonance. When flatness exists, there is properly no sound, but only the noise produced by the contact of the fingers or of the artificial instruments which may be used as a percussor and pleximeter. Not one of the four signs obtained by percussion uniformly represents the same physical condition. Flatness may arise from liquid in the chest, from solidified lung, or a tumour. The clinical problem is to determine, by means of other signs, and by taking into view certain pathological laws, which of these conditions is present in any individual case.

Dulness is another of the four signs. The normal resonance is diminished, not lost. But this is not the only character. If the attention be limited to this character, there will be a liability to error, as we will illustrate presently. The pitch of the sound is raised. This character is invariable; dulness is always higher in pitch than the normal vesicular resonance. Attention to the pitch of the sound will often assist in determining the fact of dulness, and it will enable the explorer to recognize the existence of a slight degree of dulness which would otherwise escape observation. In percussing over the scapulæ, the pitch of the resonance is extremely useful in ascertaining whether a disparity exists or not. With due attention to pitch as well as intensity of sound, dulness behind is not infrequently detected, in cases of tuberculosis, when a disparity in front is not appreciable. In general terms, dulness represents physical conditions in which intra-thoracic solids are in abnormal proportion to air. This is usually the result of an absolute increase of solids, as in tuberculosis, pneumonia, etc., but it may be due to a decrease of air, as when more or less of the pulmonary lobules are collapsed.

Tympanitic resonance is a third sign. This term has been used with-

out having been rigorously defined, and, consequently, not a little confusion exists with regard to it. As a distinct sign, it is sufficiently definite and intelligible, if we call any resonance tympanitic which is not vesicular. Whenever the resonance is devoid of the vesicular quality, it is tympanitic. Whether the intensity be greater or less than that of the normal vesicular resonance, it is equally tympanitic. Absence of the vesicular quality, and in place thereof another quality of sound expressed by the word tympanitic, is, then, the most distinctive character of this sign. But it is always higher in pitch than the normal vesicular resonance. This is another character, and it is invariable. A tympanitic resonance may represent air in the pleural sac or pneumothorax. It may represent solidified lung, provided the bronchial tubes contain air enough to furnish a resonance; under these circumstances, whatever resonance exists must necessarily be tympanitic. It may represent air in a tuberculous cavity; and, lastly, it may represent gas in the hollow abdominal viscera situated near the chest—viz., the stomach and colon.

We may reckon as varieties of tympanitic resonance, the amphoric or musical percussion-sound sometimes obtained in pneumothorax, over solidified lung and over tuberculous cavities, and the *bruit de pot fêlé*, or cracked metal resonance, produced by percussion over tuberculous cavities, over solidified lung, and, in children, sometimes over the healthy chest. It is quite unnecessary to enumerate them as distinct signs.

The last of the four signs we have called *vesiculo-tympanitic resonance*. Its distinctive characters are expressed in the name. It is a resonance containing the vesicular and tympanitic qualities of sound, and the intensity is greater than that of the normal vesicular resonance. The vesicular quality is less than in the normal vesicular resonance, but the deficiency is more than supplied by the addition of the tympanitic sound. As regards pitch, it is always higher than the normal vesicular resonance. This is the modification of resonance in pulmonary or vesicular emphysema. The exaggerated resonance over lung floating on liquid when the chest is partially filled, is vesiculo-tympanitic, and so is the resonance over the healthy lobe of a lung when the remainder of the lung is solidified by pneumonia. It is incorrect to say that the resonance is tympanitic in these cases; it is not purely, but partially tympanitic, the vesicular quality being impaired but not altogether wanting.

An advantage of attention to the pitch of sound is shown in certain cases in which it is a question whether a disparity between the two sides of the chest be due to a vesiculo-tympanitic resonance on one side or to dulness on the other side. Instances like the following not infrequently occur: A patient has pulmonary symptoms which give rise to a suspicion of tubercle. On percussing the chest at the summit, a disparity is evident; the resonance is distinctly, perhaps notably, less on one side. If the examiner be guided by the mere fact of a less degree of resonance in determining the existence

of dulness, he is likely to decide, at once, that the latter sign exists on the side on which the sound is relatively less intense, and he, therefore, infers the existence of a tuberculous deposit. The disparity, however, may be due, not to dulness on one side, but to a vesiculo-tympanitic resonance on the opposite side. The case may be one of emphysema, either limited to one side, or, as is usual, more marked on one side than on the other. The importance in making a correct diagnosis, in such a case, is great. The error of attributing the disparity to dulness from a deposit of tubercle, may be avoided, without going beyond percussion, by a comparison of the pitch of the sound on the two sides. If the disparity be due to dulness, the pitch will be highest on the side on which the intensity of the resonance is less; if, on the other hand, the disparity be due to a vesiculo-tympanitic resonance, either limited to, or more marked on, the side on which the resonance is greater, the pitch will be higher on that side.

Another illustration may be cited of a similar application of the laws of the pitch of signs obtained by percussion. We have known patients with pleurisy, the affected side being partially filled with liquid effusion, to be examined and the disease set down as tubercle, the diagnosis being based on a marked disparity at the summit of the chest, as regards the resonance on percussion. The disparity is due to the fact that, over the lung floating on liquid in the chest, percussion elicits a vesiculo-tympanitic resonance. Now, it is true that a careful exploration of the whole chest should be sufficient to prevent such an error of diagnosis; but it may be avoided, even were the examination to be limited to the summit. The pitch of the sound will be higher on the side on which the greater resonance is found; whereas, were the disparity due to dulness on the side on which the resonance is less intense, the pitch would have been higher on that side.

We pass from this brief survey of the distinctive characters of pulmonary signs obtained by percussion, to enter upon a somewhat more extended consideration of the signs obtained by auscultation. And with regard to the latter, practical auscultators need not be told that, if we exclude the crepitant râle and metallic tinkling, the adventitious sounds, or râles, are of far less value than those signs which are considered as abnormal modifications of the normal vesicular murmur. Bronchial or tubular respiration, and the modification which we have called the broncho-vesicular respiration, are the most important of the respiratory signs. These signs represent different degrees of solidification of lung; and, in the vast majority of cases, the points to be settled by physical exploration are: is the normal vesicular murmur present, or is it replaced by the bronchial or broncho-vesicular modifications? and, if the latter modifications are present, the situation, the degree, and the extent of the solidification. These are the points involved in the diagnosis of tubercle, pneumonia, carcinoma; and in the

diagnosis of bronchitis, emphysema, laryngeal obstruction, by excluding the former solidifying affections.

The distinctive characters of the bronchial respiration embrace all the elements mentioned in the introductory remarks. The inspiratory sound differs from that in the normal vesicular respiration in pitch and quality. It is high, instead of low, in pitch; it is tubular, instead of vesicular, in quality. Its intensity is usually greater. The expiratory sound is higher and more intense than the inspiratory, instead of being lower and less intense, as in the normal vesicular murmur. Other characters relate to rhythm. The expiratory sound is not continuous with the inspiratory, but separated by a brief interval, and it is prolonged to the same, or even greater, length than the inspiratory sound. Here are at least six characters distinctive of the bronchial respiration, as contrasted with the normal vesicular murmur. They are invariable characters, that is, they are constantly present, provided the inspiratory and expiratory sounds are present. Clinical observation shows that both sounds are present in the vast majority of cases; but, if either be absent, sufficient characters remain to render the sign easy of recognition. The auscultator can never have any difficulty in distinguishing the sign, if he be familiar with its distinctive characters. Attention to intensity, pitch, quality, and rhythm, will prevent the error of confounding bronchial respiration and an intense vesicular murmur, an error which we have known to be committed by those who considered themselves adepts in the practice of auscultation.

By broncho-vesicular respiration we mean the modification which has been called *rude*, *rough*, or *harsh*. The use of these terms is evidence enough of the need of an analysis of this sign, with reference to distinctive characters based on differences in intensity, pitch, quality, and rhythm. Not only are the terms inadequate, conveying an indefinite idea of the sign, but they are incorrect. The sounds in the broncho-vesicular, or the bronchial respiration, cannot properly be said to have a quality of rudeness, roughness, or harshness. Identical sounds, produced within the heart and arteries, are distinguished as soft murmurs! Nor is it easy to appreciate the propriety of calling these *dry* sounds, after Laennec. That the use of these terms has contributed to render the practice of auscultation difficult of acquisition we cannot doubt. The term broncho-vesicular is intended to express the distinctive characters of the sign. What are these distinctive characters? An inspiratory sound, less vesicular in quality, and more tubular than in health, presenting a combination of the vesicular and tubular qualities, and raised in pitch in proportion as the tubular predominates over the vesicular quality; and an expiratory sound more or less prolonged, the intensity more or less increased, the pitch more or less raised, but these abnormal modifications not so marked as in the bronchial respiration. The broncho-vesicular respiration may present every degree of gradation between the normal vesicular murmur on the one hand, and the bronchial respiration

on the other hand. Any intermediate modification is embraced in this sign. It may approximate to the normal vesicular murmur; and then the inspiratory sound is slightly less vesicular, and higher in pitch, and the expiratory sound is slightly prolonged, intensified, and the pitch raised. Or it may approximate to the bronchial respiration, and then the inspiratory sound has very little vesicular quality; it is almost tubular, the pitch is correspondingly high, and the expiratory sounds proportionably prolonged, intense, and acute.[1] It approaches these extremes in proportion as the characters of the vesicular or bronchial respiration preponderate.

Mere variations of the broncho-vesicular respiration, as regards degree, denote corresponding variations, as regards the physical condition represented by the sign. As bronchial respiration represents complete or considerable solidification of lung, broncho-vesicular respiration denotes more or less solidification short of the amount requisite for the production of the bronchial respiration. If the solidification be slight, as, for example, from a small deposit of tubercle, the variation from the normal vesicular murmur will be but little; but if the solidification be greater, as, for example, when the deposit of tubercle is abundant, the variation will approach the bronchial respiration. A case of pneumonia, observed from its beginning to its termination in convalescence, furnishes an opportunity to study all the gradations of the broncho-vesicular respiration. When the exudation begins to solidify the affected lobe, the normal vesicular murmur begins to change, the vesicular quality of the inspiratory sound decreases, a slight tubular quality is apparent, the pitch is somewhat raised, and the expiratory sound is lengthened, intensified, and raised in pitch. As the exudation goes on, these changes become more marked until, the solidification being complete or considerable, the broncho-vesicular is merged in the bronchial respiration. After a time resolution commences. The bronchial respiration gives place to the broncho-vesicular whenever the inspiratory sound ceases to be purely tubular, and the vesicular quality is appreciable. As the resolution advances, the vesicular quality becomes more and more manifest in the inspiratory sound, the pitch is more and more lowered, the intensity is less, and the expiratory sound becomes less and less prolonged, intensified, and raised in pitch, until, finally, the broncho-vesicular respiration is merged into the normal vesicular murmur. This most important sign thus enables

[1] These characters are much more satisfactorily observed by means of Cammann's stethoscope, than with the ordinary cylinder or naked ear. The use of this instrument cannot be too highly recommended, but we would warn the reader that some practice is needed in order to appreciate its advantages. We meet with many persons who say that they have tried the instrument and were dissatisfied with it. The dissatisfaction proceeds from its having been only tried, and not used for some time. If used for some time, so that the ear becomes habituated to it, the auscultator will not be satisfied to dispense with it. This statement is based on its almost daily use for seven years.

the auscultator not only to know the existence of partial solidification, but to measure its amount.

It is especially in cases of tubercle that the broncho-vesicular respiration is of great value as regards diagnosis. And, with reference to the question whether a small tuberculous deposit exists or not, it is essential to take cognizance of the normal disparity which exists in front between the two sides, at the summit of the chest. The advantage of an analysis of the normal vesicular murmur is seen in the results of a comparison of the normal vesicular murmur on the two sides in the situation just stated. The disparity relates to intensity, pitch, quality, and rhythm. On the left side the murmur is more intense than on the right, the vesicular quality is more marked, and the pitch is lower; conversely, on the right side, the murmur is less intense, the vesicular quality less marked, and the pitch higher. The expiratory sound is oftener wanting on the left than on the right side, and is frequently longer on the right than on the left side. The practical importance of making proper allowance for these points of disparity in explorations, with reference to the existence, or otherwise, of a small deposit of tubercle, is obvious. Without making proper allowance for the disparity, the characters of the murmur at the right summit might be considered as evidence of a deposit in healthy persons. Practically, in cases in which a small deposit exists, the disparity sometimes embarrasses and sometimes assists us. In some cases, when it is a question whether there be a deposit at the right summit, we are embarrassed in judging whether the existing disparity be greater than the normal disparity. But in cases in which it is a question whether a deposit exists at the left summit, the normal disparity assists us, because, if we find the murmur on that side less intense, less vesicular, and higher in pitch, we know, at once, that we have broncho-vesicular respiration.

A prolonged expiratory sound constitutes, as we have seen, one of the characters of both bronchial and broncho-vesicular respiration. A prolonged expiratory sound sometimes exists without any appreciable inspiratory sound. Does the mere fact of the prolongation of the expiratory sound show that it belongs to either of these signs? Certainly not. A prolonged expiratory sound occurs in certain cases of emphysema, and it occurs not unfrequently in this affection when an inspiratory sound is not appreciable. Moreover, a prolonged expiratory sound, as already stated, is not unfrequently found in health at the summit of the chest, on the right side, especially in females. Attention to the pitch of this sound will always enable the auscultator to determine whether it represents, or not, solidification of lung. If it be high in pitch it denotes solidification, not less when it occurs without as with an inspiratory sound having the characters of the bronchial and broncho-vesicular respiration. But if the pitch be not raised it constitutes no evidence of solidification. The prolonged expiratory sound of

emphysema is not raised in pitch; the prolongation is simply due to the prolonged and forcible act of expiration in this affection.[1]

We pass to consider the distinctive characters of *cavernous respiration*. We shall not be accused of temerity in saying that the description of this modification by Laennec is unsatisfactory, for so we believe it has been generally regarded. As his description is very brief, we quote his words: "*Ce bruit respiratoire a le même caractère que celui de la respiration bronchique: mais ou sent évidemment que l'air pénètre dans une cavité, plus vaste que ne l'est celle des rameaux bronchiques; et l'orsqùil peut exister quelques doutes à cet égard, d'autres phénomènes, donnés par la rèsonnance de la voix ou de la toux, lèvent promptement toute incertitude.*" To say that the cavernous respiration and the bronchial respiration are similar, must strike the mind as an improbability, in view of the wide difference in the two physical conditions. And, if similar, how is it possible to discriminate between these signs? Laennec says the cavernous respiration gives the idea of air coming from a larger space than the bronchial tubes. But Laennec would not certainly have admitted this as a proper mode of determining the physical conditions represented by signs. To decide from the idea which the sound suggests, is to give a loose rein to the imagination, and to run a great risk of running into error. It is evident that Laennec regarded the bronchial respiration as cavernous, whenever other signs (since shown to be fallacious), were considered as pointing to a cavity. Others who have attempted to describe cavernous respiration, since the time of Laennec, have not had much better success. The line of demarcation between cavernous and bronchial respiration has not been satisfactorily made out. The respiration pronounced cavernous by experienced auscultators, has, we believe, generally been bronchial, and this is almost invariably true of the cavernous respiration so readily and frequently discovered by those who have but a limited knowledge of the subject. Taking into account only the description by Laennec and others, we must think that they are more consistent who, with Skoda, deny the existence of such a sign as cavernous respiration.

We are, however, fully satisfied of the existence of cavernous respiration. We believe it has distinctive characters, by which it may be readily distinguished from bronchial respiration. We held in reserve a positive opinion as to the constancy of these characters, until we had accumulated evidence sufficient to appear to our mind conclusive. What are the distinctive characters? An inspiratory sound, non-vesicular, blowing, low in pitch, and an expiratory sound lower in pitch than the inspiratory. By the term blowing, applied to the inspiratory sound, we do not mean what Laennec expressed by this term (*respiration soufflante*), viz., the sensation

[1] A sibilant râle is liable to be mistaken by the young auscultator for a high pitched expiratory sound.

of air passing into and out of the ear of the auscultator. We mean simply, a non-vesicular sound, without the acuteness and tubular quality which characterize the bronchial breathing. The fact that a respiration with the characters just named, is heard within a circumscribed space, and generally surrounded by the bronchial respiration, is in confirmation of its being cavernous; but this is not the evidence on which we rest the correctness of the description. The only evidence adequate to establish the validity of this, or any other sign, is the concurrence, in a sufficient number of instances, of the phenomena during life, with the physical conditions as found after death. We claim to have accumulated ample evidence of this kind. We have many times pointed out the characters of this sign, in the living body, to medical classes, and subsequently exhibited the cavity in the dead body. Is it too much to ask others who are especially interested in physical exploration, that they will take the necessary pains to verify or disprove for themselves, the account which we have given of this sign?[1]

Before leaving cavernous respiration, we would remark that this sign is not so easily found, even when cavities exist, as supposed by those who mistake for it the bronchial respiration. The latter is oftener heard over cavities than the cavernous respiration, because cavities are so often surrounded and covered by solidified lung; various circumstances must concur for the production and appreciation of cavernous respiration; the cavity must not be extremely small; it must be near the superficies of the lung; it must be free from liquid contents; it must collapse with expiration, and the bronchial tubes leading to it, together with the opening into it, must not be obstructed. It is from the non-concurrence of these circumstances, that it is not a very common sign. Its absence is no proof against the existence of a cavity, although, as we believe, when present, it invariably denotes a cavity. We would add that the cavernous and the bronchial

[1] Dr. Walshe, in the last edition of his valuable work on Diseases of the Lungs, says he fears there are many exceptions to the rule which we have stated, with regard to the pitch of the inspiratory and expiratory sound, in cavernous respiration. If there be a cavernous respiration, with certain distinctive characters, it would be reasonable to presume that it should invariably represent a cavity, and nothing else, as bronchial respiration always represents solidified lung (which we believe to be a fact). But whether there are exceptions to the rule or not, is to be determined by observation; and we venture to hope that, before another edition appears, the distinguished author will have submitted the sign to the *experimentum crucis*. We would add, let it be borne in mind that the cavity found after death, in a situation corresponding to that in which a bronchial respiration had been found during life, is not proof against the validity of the cavernous respiration which we have described. We have explained, in the paragraph which follows that above, why this should frequently occur. The proof of the validity of the sign is in always finding a cavity after death in a situation corresponding to that in which the characters of the cavernous respiration had been distinctly ascertained during life.

respiration may be combined, constituting what may be called broncho-cavernous respiration.

The musical intonation in amphoric respiration is in itself a sufficiently distinctive character. If pneumothorax do not exist, this sign may be considered as evidence of a pulmonary cavity. The expiratory sound in amphoric respiration, we believe to be generally, if not invariably, lower in pitch than the inspiratory sound. It has occurred to us to observe repeatedly, in connection with tuberculous cavities, an amphoric or musical inspiration, and an ordinary low-pitched, non-musical expiration.

The distinctive characters of the ordinary vocal signs, viz., *exaggerated vocal resonance, bronchophony, œgophony, pectoriloquy,* and *amphoric echo,* are few and simple. That bronchophony is often called pectoriloquy, and the latter spoken of as if it were a sign daily met with, is not because these two signs are not sufficiently distinct, in the one the *voice,* and in the other the *speech,* being transmitted to the ear. The elevation of the pitch of the sound in bronchophony, as contrasted with the normal vocal resonance, or simply exaggerated resonance, is one of the most distinctive of its characters. The voice is not only concentrated, and near the ear, but raised in pitch. The same is true of œgophony, the distinctive character of this sign being the superadded tremulousness. Here, too, it is not because the two signs, bronchophony and œgophony, are not distinctly defined, that the former is often called the latter. To determine precisely what is present, and not discover precisely what it is expected will be found, is a gift which all persons do not possess, even when the subjects of observation are so simple as the distinctly-defined signs obtained by auscultation.

There are certain vocal signs, in addition to those just named, which, for the most part, have been overlooked by auscultators, and which will be found to possess considerable importance. We allude to the sounds produced by the whispered voice. With the whispered voice at the summit of the chest, in front, especially over the bronchi, and in the interscapular space behind, a blowing sound is heard, in most healthy persons, which may be designated the *normal bronchial whisper.* The abnormal modifications of the normal bronchial whisper are correlative to certain respiratory signs, viz., bronchial, broncho-vesicular, and cavernous respiration. Solidification of lung, complete or considerable, gives rise to an intensification of the blowing sound in the upper part of the chest, where it is heard in health, and an intense sound is developed in situations where none is heard in health, for example, over the lower lobes, in cases of pneumonia. The pitch of the sound is acute. An intense, high-pitched sound, corresponding, as regards its significance, with ordinary bronchophony, may be called *whispering bronchophony.* It is not less reliable, as a sign of complete or considerable solidification of lung, than bronchophony, or the bronchial respiration, and certainly deserves a rank of equality with these signs. It adds to the proof of the existence of solidification, when asso-

ciated with its correlative signs, and may sometimes be available, when the latter are not.

Partial solidification of lung, the amount being insufficient to cause the bronchial or broncho-vesicular respiration, gives rise to a lesser degree of intensification of this blowing sound at the summit of the chest, and to a less intense sound developed in situations where none is heard in health. The pitch is proportionately lower. This corresponds with the broncho-vesicular respiration and exaggerated vocal resonance, and may be called an *exaggerated bronchial whisper*. It is chiefly at the summit of the chest (where the sound is strictly an exaggeration of that heard in health), in cases of a small tuberculous deposit, that this sign is valuable, and in many cases it is of no small value as a sign of tuberculosis.

Of the problems in diagnosis presented in practice, few are of greater importance than to determine, in certain cases, the existence, or otherwise, of a small deposit of tubercle. This problem is also, sometimes, one of the most difficult in physical diagnosis. Happily, there is a large number of signs more or less of which may concur to establish the diagnosis if tubercle exist. One of the signs often available is the exaggerated bronchial whisper. If the intensity and pitch of the sound exceed that of health, it is a most significant, if not conclusive, sign of a deposit. We advise practical auscultators not to omit to ascertain whether this sign be present in cases of suspected tuberculosis in which the evidence afforded by other signs is not complete; and, even if other signs do afford satisfactory evidence, this sign, with others, may be sought for to render assurance doubly sure.

In order to judge whether the bronchial whisper be exaggerated or not, it is needless to say the auscultator must be familiar with the sound as heard in health. And here, as with regard to the murmur of respiration on the two sides of the chest, at the summit, a disparity existing in health is to be taken into account. The normal bronchial whisper on the right side is louder than on the left side. It may be present on the right side and wanting on the left side. As regards intensity, it varies considerably in different healthy persons. The pitch, however, is higher on the left side. Consequently, a louder whisper on the left than on the right side, and a higher whisper on the right than on the left side, are morbid signs.

As there is a whispering sound correlative to the bronchial and broncho-vesicular respiration, so there is a sound correlative to cavernous respiration. This we may call the *cavernous whisper*. Compared with whispering bronchophony and the exaggerated bronchial whisper, it is a low-pitched sound. Lowness of pitch is its distinctive character; and this character is strikingly distinctive, being presented generally in contrast with the high-pitched sound, denoting solidified lung, surrounding the circumscribed space which corresponds to the size of the cavity. This cavernous sign, coexisting with cavernous respiration, serves to confirm the latter. It may be available

when the cavernous respiration is not satisfactorily made out. It is, therefore, a sign of some importance.

Whispering pectoriloquy is sufficiently distinct from whispering bronchophony, but it is practically of no great importance to make the distinction, for whispered words are as likely to be transmitted through solidified lung as through a cavity, if not more so. It is, therefore, of no more value as a cavernous sign than ordinary pectoriloquy, *i. e.*, transmission of sounds with the loud or oral voice.

The *amphoric whisper*, like amphoric respiration and amphoric echo, already noticed, is characterized by a musical intonation. This character is often more strongly marked with whispered words than with the respiration or words spoken with the loud or oral voice.

The validity of the sounds accompanying the whispered voice, as signs, of course, rests on clinical experience. Yet, after having settled the significance of the modifications of the expiratory sound in the different signs pertaining to the respiration, we may rationally determine the meaning of the different modifications of the whispered voice. A whisper involves a forced expiration. If the patient be requested to pronounce, slowly and distinctly, in a whispered voice, a series of numerals, with as much effort as is convenient, he performs with each word a separate, forcible expiratory act. The sound, in fact, is neither more nor less than an expiratory sound more intense than in ordinary breathing. For the same reason, therefore, that the expiratory sound is prolonged, intense, and high in pitch in bronchial respiration, a prolonged, intense, and high-pitched sound with the whispered voice (whispering bronchophony), denotes the same physical condition, viz., complete or considerable solidification of lung.

So, also, a sound with the whispered voice less prolonged, intense, and not so high in pitch (exaggerated bronchial whisper), denotes small or moderate solidification, for the same reason that broncho-vesicular respiration represents this condition. And because the expiratory sound in cavernous respiration is low in pitch, a low-pitched sound with the whispered voice (cavernous whisper), proceeds, in like manner, from a cavity.

A few remarks only on the *Râles*. The distinctive characters of these are well defined and plain. Restricting the subdivisions of the dry bronchial râles to two, viz., the sibilant and sonorous, and, of the moist bronchial or mucous râles, to three, viz., the coarse, fine, and subcrepitant; the characters proper to each are sufficiently simple, and it would be of no practical utility to make the subdivisions more numerous. The single vesicular râle, viz., the crepitant, is in general easily distinguished from the bronchial râle which approximates to it, viz., the subcrepitant. The latter is a moist, bubbling sound, however fine it may be, and is liable to be heard in expiration, whereas the crepitant is a dry crackling sound, and heard only in inspiration. The crepitant and subcrepitant râles are not infrequently combined, and it is probably owing to this fact that some have supposed that

the former may occasionally be heard in expiration. We cannot pass from this notice of the crepitant râle, without referring to the explanation of it given in this Journal twenty years ago by the late Dr. E. A. Carr, of Canandaigua, N. Y. The reader will find the article in the No. for October, 1842. It has never been cordially received by our own countrymen, and appears to be little known on the other side of the Atlantic. We do not doubt that it is the correct view of the mechanism of this sign, and that it will ultimately be generally accepted as such. It is perfectly consistent with the distinctive characters of the sign, viz., the dryness and limitation to the inspiration; and this cannot be said of the usually received theory which attributes the sound to bubbling in the vesicles and capillary tubes. Dr. Carr has recently died. We wish he could have had the gratification of seeing his explanation adopted by the profession.

A single point with regard to the moist bronchial râles (mucous and subcrepitant). In pitch they correspond with the respiratory sound in the portion of lung whence they emanate. In other words, if they are associated with the bronchial respiration, they are high in pitch; they are less high in pitch if associated with broncho-vesicular respiration, and they are low-pitched if the respiratory murmur be unchanged. We may, therefore, infer from the pitch of these râles, what the respiratory sound would be in cases in which the râles are alone heard. This is a point sometimes of practical value in diagnosis.

ART. II.—*Some Remarks on Neuroma, with a brief Account of Three Cases of Anomalous Cutaneous Tumours in One Family.* By ALFRED HITCHCOCK, M. D., of Fitchburg, Mass.

THE term Neuroma, according to Dr. Smith, was first introduced by M. Odier, of Geneva, in 1803, and has since become established in medical nomenclature to designate a *tumour connected with a nerve.* The ancients described the disease somewhat obscurely under the names of *ganglions, nodes,* and other less specific terms. Some modern writers have either confounded it, or made it identical with *painful subcutaneous tubercle.* Continental pathologists have, in modern times, carefully studied the disease, and the results of their observations are condensed in the valuable work of Dr. Robert W. Smith, of Dublin, which was published about ten years ago. To that work I am indebted for many of the facts pertaining to the disease contained in this paper.

Neuromatous tumours are of spontaneous origin, the consequence of morbid process, or the result of wounds or injuries. If they are idiopathic, and but one tumour exists, it is usually painful; but if many tumours exist,

they are usually free from pain. The traumatic varieties of neuroma, whether single or many, are usually very painful. The tumours in the constitutional variety, which is to be considered in this paper, are usually oblong in shape, sometimes globular, and slightly pedunculated, and may vary in size from that of a millet-seed to that of an ostrich egg. They more usually exist upon the spinal nerves, but occasionally in the ganglionic system. The writer witnessed a dissection of the latter class, at La Charité, Paris, in 1852. In this case there was a multitude of tumours on the sympathetic nerve, from the size of a pea to that of an English walnut. The spinal nerves in the pelvis were also involved in the disease. The cutaneous nerves, I think, were entirely free from disease. A published report of this interesting case has not been found.

In general, the tumours are *solid*, with an *elastic feel*, and sometimes are said to be composed of a cyst filled with fluid. They are of very slow growth, and are slightly movable, especially laterally. Those formed on minute cutaneous nerves will disappear in the areolar tissue by firm pressure. The skin is not discolored over them, neither does it adhere to them, unless friction, or pressure, or other cause, has interfered with their natural development. Inflammation, suppuration, or absorption, seldom occurs in them. The true neuroma is generally regarded by pathologists as a disease of a *benign character*. Some, however, regard neuromatous tumours as cancerous; and it is unquestionably true that malignant tumours are occasionally found involving trunks of nerves. Several continental pathologists maintain that neuroma is a malignant disease; while Dr. Smith, in his valuable memoir, presents very strong reasons for its benign character. This question can hardly be said yet to be finally settled—certainly not more satisfactorily settled than with a pretty large variety of tumours, that are developed in other tissues of the body. The truth on this subject may yet be found in a solution of the question whether or not benign tumours ever degenerate into malignant. Mr. Abernethy, as is well known, favoured the doctrine of such transformation. Professors Gluge, of Germany, and Syme, of Edinburgh, at present maintain the doctrine of the malignant degeneration of certain recurrent tumours. Mr. Paget also coincides in this view, and very aptly remarks that "recurring fibroid tumours assume more and more malignant features the oftener they recur." And he also adds: "Whatever be the truth concerning the supposed transformation of an innocent into a malignant, morbid growth, I think it can hardly be doubted that, in the case of some recurring growths, the successively later growths acquire more and more of the character of thoroughly malignant disease." He also expresses (p. 394) considerable doubt whether the so-called painful subcutaneous tubercle "is identical with the fibro-cellular neuroma or not." According to Rokitansky (vol. iii. p. 347), neuroma should be ranked with the fibroid structures. He describes it as non-malignant, and says, "that with the exception of cancer, neuroma is the most frequent adventitious

growth which occurs in the peripheral nervous system. In quantity, they may exist from one to countless numbers. In the latter case it constitutes a very *general disease*, as to the cause of which we are *still in the dark*. The size of the tumours bears no direct proportion to the thickness of the nerve on which it is formed; for, in point of fact, it has been noticed that those tumours which are situated on small branches, are relatively much larger than those which occupy the thick trunk of a nerve." He also says (vol. i. p. 213), "Medullary carcinoma has some sort of affinity to the medulla of the nervous system; this is evinced by the fact that in the eye-ball this disease always springs from the retina or optic nerve, and nerves speedily perish in the range of medullary tumours."

Several writers have observed mental imbecility, idiocy, or cretinism, in persons afflicted with neuroma as a general disease. In the three cases of anomalous cutaneous tumours, in the Clark family, described in this paper, although a tolerable degree of intelligence existed, and a desire to act strictly conscientious, yet there is a very obvious imbecility and vacillation of the mental and moral powers. The expression of their countenances strongly corroborates this opinion, and justly conveys the impression that they are persons of weak intellect.

CASE 1. *May 4th*, 1860. Mrs. Elizabeth Clark, wife of Peter Clark, deceased, was the daughter of Samuel and Abigail Brown, of Worcester, Massachusetts, where she was born, Oct. 3, 1779. Her parents "kept tavern," and in June preceding her birth, the weather being very hot, according to family tradition, her mother "melted herself." From this time she was sick, and kept her bed till the birth of Elizabeth. She was a tolerably healthy child, was occasionally troubled with a "rash," till thirty years of age, when the tumours in the skin began to appear. They have gradually increased in number, and some of them very slowly in size; have never been painful, except from injury, and they have always retained the colour of the skin. In shape they are variously *oval*, *globular*, slightly *pedunculated*, or *merely* papular, oval *disks*. Some are hard like scirrhus, some have a firm, elastic feel, and some are soft, and readily disappear by pressure under the skin. None have the appearance of melanosis.

At this time the tumours cover the whole body—are most abundant on face, neck, thorax, and arms. In size they vary from that of a pin's head to that of a hickory-nut. They number many hundreds, too many, in fact, to think of counting them. The tumours in her case, as well as in the daughter and son, have multiplied pretty steadily with advancing age.

The writer has procured photographs of all these cases for preservation.

Mrs. Clark is now nearly 81 years of age, is tolerably well, and her usual mental power is quite unimpaired. She gives the foregoing facts concerning her own history, and also states that her parents were healthy, without tumours, or *cancers*, or eruptions of any kind; and that none

existed among their relatives, or among her own brothers or sisters, there being ten children in the family.

Mrs. Clark had seven children. Several of them died early of acute diseases. Only two of the children, Samuel B. and Elizabeth D., exhibited the cutaneous tumours like the mother. Her husband died many years ago of acute disease. He had brothers and cousins who died of cancer.

CASE 2. In the case of the daughter, Elizabeth D. Clark, aged 54, the tumours began to appear at 10 years of age. One, near the clavicle, attained the size of a hen's egg, and was removed, when she was 21, by Dr. Torrey, of Windsor, Vermont. Another small tumour, on the lip, was removed, a few years ago, by the family physician, Dr. W. H. Bigelow, of Bolton. Neither of these tumours have ever returned, although she thinks the tumours in other parts of the body increased in number more rapidly after their removal.

CASE 3. Samuel B. Clark, aged 46; single; factory operative, Bolton, Mass. About the first of June, 1856, consulted me for a painful tumour of the right arm. He was thin in flesh, pale, seemed timid, dejected, and almost childish when conversed with about himself. The history of the tumour he related as follows: About twenty-two or twenty-three years ago, he discovered a small, movable tumour on the right arm, just above the internal condyle of the humerus. This increased very slowly for twenty years, and did not interfere with the motions of the arm; was not sensitive or painful, unless compressed, or the arm used violently, when numbness, or pricking sensations, or acute pain, would extend to the fingers. About two years ago, the tumour began to increase in size much more rapidly, and the pain and discomfort were correspondingly increased. For nearly a year past he has been unable to labour, in consequence of the size and painful character of the tumour. At present, the tumour measures $6\frac{1}{2}$ inches in its long, by $3\frac{1}{2}$ in the short diameter, and is nearly a perfect ovoid. The lower extremity seems pretty firmly fixed at the internal condyle of the humerus, and the long axis extends in the direction of the axilla. The whole tumour is solid, elastic, smooth, movable, especially laterally, and evidently without adhesion to integument or bone. The skin is of natural colour and sensibility, while pretty firm manipulation of the tumour is productive of great pain, chiefly in the parts below supplied by the ulnar nerve. The tumour is regarded as encysted fibro-plastic, requiring removal to escape the great pain and loss of use of the arm, caused by its rapidly increasing size and by the supposed *mechanical compression of the ulnar nerve.*

In this opinion Drs. Marshall, Wellman, and Cummings, of Fitchburg, concurred, and on the 16th of June, 1856, rendered valuable assistance in the operation for its removal. By a longitudinal incision the integuments were easily detached from the investing capsule of the tumour, and when carefully attempting to enucleate it, without injury to the ulnar nerve

(which was expected to be found between the tumour and bone), it was discovered to be a tumour of *that nerve*. The ulnar nerve, in fact, appeared to be the axis of the spheroid, and at either pole was enlarged, the lower to three, and the upper to five lines in diameter; the capsule of the tumour was evidently composed of the neurilemma. The trunk of the nerve, from above, was spread out into a vast number of flattened fibres, partly dipping into the tumour, but chiefly running in curved lines, on its convex surface, like the network on a balloon, and subdividing till scarcely visible to the naked eye; and, at the lower part of the tumour, converging in more and more distinct lines to form the nervous trunk, where it passes over the groove of the internal condyle of the humerus. To save the nerve was found impossible, and it was accordingly divided, first above and afterwards below, and, there being no adhesions to the bone, the tumour was readily separated from its bed. Some of the muscles were displaced and atrophied, by mechanical pressure, but not involved in the disease. Only one artery required ligature; the tumour was not attached to the skin or bone. With the exception of a secondary hemorrhage, on the eleventh day, which was readily controlled by compression, the wound healed kindly, partly by adhesions, and partly by granulations, and with paralysis of the ulnar portion of the forearm, he returned to his home, in five weeks, calling himself "well."

It should be here stated that the tumours in the skin were observed at the time of the removal of the large tumour of the ulnar nerve. These cutaneous tumours were firmer and evidently more prominent than when he subsequently entered the hospital, in 1858, as described by the record.

The tumor weighed two pounds, avoirdupois; oval, smooth, solid, very elastic, and covered with an investing capsule, which could not be easily detached; the cut surfaces immediately presented a slightly convex appearance, and on firm compression several smaller convex disks appeared on the general convexity of the cut surface. The colour was generally of a grayish, glistening white, in spots inclining to yellow, or a bluish, translucent white; appears succulent, and is partially friable in spots, yet is pretty firmly coherent by apparently fibrous or condensed areolar tissue. Dr. Wellman and myself examined the tumour microscopically, and failed to find evidence of its encephaloid character, but did find evidence of its fibro-plastic structure. Sections of the tumour were sent immediately to different microscopists. A portion sent to my brother, Dr. Homer O. Hitchcock, House-Surgeon at Bellevue Hospital, was examined by himself, by Drs. Alonzo Clark and J. C. Dalton, Jr., of New York, who concurred in opinion that it was of the fibro-plastic character, and without cancer-cells.

The following extracts of letters, from their distinguished authors, express their several views of the specimens from this tumour which were sent for their examination.

Of a specimen sent in alcohol to Prof. E. R. Peaslee, then at Hanover, N. H., he writes as follows:—

JULY 9, 1856.

I would not like to pronounce unqualifiedly on the character of a tumour in the circumstances, since the action of the alcohol must somewhat change the minute structure. In the first place, I do not find any reason for believing the growth *encephaloid;* second, it lies in my own estimation between neuroma and a modification of the ordinary *fibrous tumour;* and as I fail to find anything characteristic of the former, I should be obliged, from the present specimen, and in its present condition, to think it the latter, of which it seems to me to present the characters. I should, however, hesitate to give a decided opinion in the circumstances.

Of a specimen sent to Dr. J. B. S. Jackson, of Boston, the day after its removal, he writes as follows:—

BOSTON, June 20th, 1856.

DR. HITCHCOCK—*Dear Sir:* I received your specimen in good condition, and it has been examined by several others as well as by myself. No one of us, I believe, agrees in calling it *neuroma;* my own opinion was decidedly against that view of the case, and having had an opportunity to examine Dr. Smith's specimens and his plates side by side when I was in Dublin, I came to the conclusion that a very considerable variety of structures were described under that name; and that it might be very easy to confound neuromatous with tumours that simply involved or pressed upon the nerves. The light-coloured portion I thought resembled what has been described as the fibro-plastic, and the yellowish opaque I supposed to be the result of a secondary action, probably inflammatory. The appearances of "encephaloid" vary much in different cases and in different parts of the same mass.

The light-coloured portion of this tumour I should say varied very much in its gross appearance from an average encephaloid; far more I think than Dr. Bigelow would make it judging from his note, which, as you will see by the date, I have just received. I expected, therefore, that it would be found microscopically to possess the usual fibro-plastic appearances, and I am surprised to find that there is so much of the encephaloid character. In regard to the general character of the disease practically I considered it when I first saw the specimen, and after reading your history of the case, *to be cancer*, though not the most common form. I had little or no doubt that it would return and sooner or later destroy the patient, and I presume that my friends here agree with that first impression. The pure fibro-plastic tumour often enough returns and is fatal; but this case seems to have been a step towards encephaloid.

Dr. Jackson placed the specimen in the hands of Dr. H. J. Bigelow, of Boston, who expressed the following opinion.

JUNE 20, 1856.

Dear Sir: The tumour of which you sent me a portion of uniform structure, flat on section, tender and of a bluish translucent tint, although

it resembles encephaloid in these respects, does not present the most frequent microscopic appearance of that disease; the cells having a tendency to excessive elongation, some consisting of an attenuated long nucleus, with at each end a long fibre; others elongated narrow bodies with parallel sides and blunt ends, others again merely ovoid and elongated nuclei; but nuclei and nucleoli all small. Yet these appearances correspond sufficiently with some other cases of undoubted cancer, and also with one of Paget's figures. I should consider also that the universal occurrence of these masses in the same patient was conclusive as respects cancer, if indeed they are not some also melanotic.

Dr. C. Ellis, of Boston, writes as follows to Dr. Jackson: "The tumour from the arm was examined by Dr. Shaw and myself. We both found round or oval granular nuclei; the nucleoli in which were comparatively small; also cells more or less elongated containing the same nuclei above described. Dr. Shaw was inclined to call the disease fibro-plastic. I do not deny that it might be so-called, but would rather describe the appearance of the cells than give them a name."

The following is the record of the case at the Massachusetts General Hospital.

1858. Samuel B. Clark, aged 47; single; labourer; Bolton. Encephaloid tumour of arm. One year.

January 6. Family scrofulous, himself generally healthy, twenty-four years ago discovered a small movable bunch on right arm just above bend of elbow. This increased very slowly, at times seeming to remain stationary and not interfering with the motions of the arm. At the end of twenty years it began to rapidly increase, extending over to back of arm, retaining, however, its mobility, and not causing him any pain except after severe exertion; when the pain was of a dull aching character; never lancinating. It was removed a year ago last June by a surgeon of Fitchburg. It weighed two pounds; the wounds healed kindly. Last February the disease began to return, commencing, as previously, in the form of a small lump about two inches above internal condyle of humerus; growing rapidly, extending in either direction so as to completely encircle the arm, and becoming the seat of severe lancinating pains; especially distressing at night. The growth is developed principally to the inside of arm, where a large spherical mass, hard and immovable, juts out; is continued round to outside of arm, where, however, the convexity is less marked, and extends upwards; all the while diminishing in circumference till the hardness disappears about five inches above elbow. In the axilla a firm hard cord can be traced downwards into the mass where it disappears. Pressure along this is productive of great pain. The circumference of the arm over the greatest convexity of the tumour is twenty inches. The integument covering the whole mass is reddened and adherent, large veins anastomose over its surface, one of which was ruptured about a week ago and now bleeds freely

whenever compression is removed. Right forearm is cold; the muscles do not appear to be wasted. Hand droops; fingers are permanently contracted. Has been unable to use his hand for a month. Pulsation in radical artery feeble. A curious eruption of the skin also strikes the eye; most pronounced upon the back; sparse upon the chest and belly; looking like small pediculated tumours of the skin; wrinkled, flaccid and flabby, very soft, receding on the slightest pressure through the skin into the cellular tissue. These are the largest, a dozen or more in number of the size of a large green pea, but the earliest stage of this eruption is seen to be a minute papule sparsely disseminated over the trunk and on the forehead, and it is to be seen in intermediate stages. A few of the largest of these little tumours existed upon the amputated arm, and proved, on dissection, to lie in the cellular tissue, of a soft white material though not easily torn, and to consist under the microscope of elongated nuclei, and cells identical with those found in the tumour.

Amputation at the shoulder-joint was performed by Dr. Bigelow with an upper flap by transfixion in the usual manner, January 9, 1858.

The tumour, on dissection, proved to lie beneath the muscles, being about eight inches in diameter, ovoid. The musculo-spiral nerve lay in a groove upon its surface enlarged but not adherent. The radial nerve was also detached by dissection from the surface of the tumour; but the ulnar nerve entered the tumour at its upper extremity and was immediately lost in its substance. Before disappearing it bulged like a sparrow's egg, this knob being encysted beneath the surface of the tumour, but readily peeling from it. Its point of emergence was entirely obscured by the adherent cicatricial and diseased tissue at the lower extremity of the tumour at the point of the old operation. The tumour was not adherent to the bone. Upon section it presented, on the whole, an encephaloid character, the centre seemingly more succulent, vascular, transclucent, and mottled; the periphery more opaque, white, and lobulated with lymph, friable to the thumb without difficulty; the centre tougher. Microscopically the tumour consisted mostly of elongated nuclei, containing one or more nucleoli about one-fourth the width of a blood-corpuscle and from two to four times as long, often bifid at the extremities, the nucleoli rather small than large, some tendency to fibroid tissue.

Omitting the daily record till April 22d, 1858, we find "Less pain than at time of last record, shoulder still quite sensitive, discharged well."

From Dr. W. H. Bigelow, of Bolton, I received the following terminal facts in Samuel B. Clark's case. He remained in the hospital till April 22, 1858, when he returned to Bolton, with the stump not healed but hard at one point. This rapidly increased in size and hardness and finally became raw and bleeding. He wasted in flesh and died August 17, 1858. (A post-mortem examination was not made.)

Several important inquiries naturally arise from a review of these cases.

1st. Was Samuel B. Clark's tumour of the ulnar nerve a true neuroma?

2d. Is neuroma naturally *benign*, and does it sometimes degenerate into malignant disease?

3d. The small cutaneous tumours having been found by several observers clinically and microscopically identical with medullary cancer, how is it that such a crop of that disease has grown so inoffensively 30, 40, and 50 years on these three persons?

4th. Is it not possible or even probable that these tumours originate in minute cutaneous nerves, by reason of which their malignant tendency is modified or controlled, perhaps at the expense of intellect or some other manifestation of nerve power?

These inquiries open a field for research where the annals of clinical surgery and pathology afford but little information. With the hope of pursuing this inquiry farther, I invoke the aid of the readers and contributors of this Journal to elucidate this rare and obscure disease.

ART. III.—*Inversion of the Hairs of the Labia Pudenda.* By C. D. MEIGS, M. D., Emeritus Prof. of Midwifery in Jefferson Medical College. In a letter to the Editor.

MY DEAR SIR: Since I saw you yesterday I have found, at page 95 of my "Letters to the Class," 4th edition, the relation of a case of pruritus vulvæ closely resembling that of our patient, Mrs. ———, and which was the subject of our conference.

The late Dr. ——— had for some time had charge of the young lady, aged about 20 years, and suffering greatly from continual pruritus and heat of the vulva. Finding himself baffled in his trials of cures, he at length asked leave to make a physical diagnosis; and you may infer as to the severity of the young lady's distress that could induce her to yield assent to so trying a demand.

The inspection of the parts did not, however, provide for the Doctor means of cure more efficient than the preceding ones; so that, the various washes and even the application of nitrate of silver having failed, he gave it over to me.

I was much surprised, on inquiry, to find the margins of each of the labia studded with long, straight, and stiff hairs, just like eyelashes, all of them directed inwards, and so, constantly teasing, irritating and vexing the mucous body of the interior, and producing a redness or florid tint of the membrane, with heat and the intolerable itching of which she so long had complained. I was struck with the analogy of the situation to that of the conjunctiva in those cases of conjunctivitis which you have often found to

depend upon inversion of eyelashes or trichiasis. It was a case of real trichiasis, not before described, and probably not before noticed. I at least had not met with any such notice in the books.

I directed the offending hairs to be gradually eradicated by tweezers, which the lady's nurse accomplished after some days, and the patient was thus cured of an *incurable disorder*.

Now, my dear sir, our patient is in precisely a similar condition, both as to the distress and the cause of that distress; and I confidently expect that if she will accomplish the eradication of the offending lashes, "whose name is legion," she will find herself delivered from the annoyance.

You, who know as well as I do, how obstinate and how intractable are many of the cases of pruritus, will do, I think, a service to many distressed people, and shed a little beam of light on the path of many a bewildered colleague if your widely known journal should assist to spread this little item of useful knowledge where my work has not been able to extend it.

I am, dear Doctor,
With the truest esteem,
Your obliged servant,
CH. D. MEIGS.

710 Walnut St., Jan. 28, 1862.

ART. IV.—*Induction of Premature Labour.* By C. D. MEIGS, M. D., Emeritus Prof. of Midwifery in Jefferson Medical College. In a letter to the Editor.

DEAR SIR: I am not rarely consulted by medical gentlemen at a distance on the subject of premature labour and on forced abortion supposed to be rendered necessary by an ascertained deformity of the pelvis. Having had two such letters to answer this week, I considered that it might comport with the purposes of your excellent journal to say in it what appears to me to be the most advisable method in such cases. If you should publish this note it might not only prove acceptable to some of your readers, but it would save my time, in the way of answering inquiries.

Dr. Karl Braun, of Vienna, proposed, a few years ago, to open the os uteri by means of what he called a COLPEURYNTER, which is a small delicate bag or bladder composed of vulcanized rubber, to which is attached a syringe and a stop. This bladder, not bigger than a walnut, if introduced within the vagina, may be distended by means of the syringe with tepid water or air. It may be inflated or distended so as to become equal in size to a small fœtal head, and if the distension be gradually and very slowly effected it will not necessarily produce any distressing or painful sensation.

Now, as the uterine extremity of the vagina arises from the outer circumference of the cervix uteri, it is clear that such a distension as above supposed could not fail after due time to draw the walls of the cervical canal outwards, and so diminish the antagonism of the cervix and os uteri to that of the fundus and corpus uteri. This very condition of lessened resistance is all that is requisite in the case, because, as soon as the power of the fundus and body becomes preponderant, it will begin to force the ovum downwards, and at length, after dilating the cervix and os, expel it. I apprehend the method to be in all cases infallible—the condition being that the colpeurysis shall be properly effected.

To bring on a forced abortion in labour by the use of the stilette, or by injecting different medicinal articles or gases into the gravid womb, appears to me to be an encroachment, by medical people, upon those rules of art within whose sacred pale we may be held blameless, whereas, we are not without blame when we transcend those barriers that are so clearly defined in our collegiate diplomas. Witness the instant death that recently occurred at Edinburgh, from injecting carbonic acid into the uterus, as related in your last number! But to gently remove the retaining power of the os and cervix by a moderate and reasonable colpeurysis, is really to do no violence to any tissue, the operation being merely to suspend an antagonistic force, thus rendering the method of colpeurysis the simplest and safest possible, and certainly unfailing in success.

Inasmuch as operations performed for the induction of premature labour, and of abortion, are not without risk to the patient; and as it is well known that there are wretches who are so abandoned as to desecrate the profession of medicine, and spurn their own honor in the low calling *teneros avellere fœtus*, I conclude that no regular and reputable member of the body will ever consent to institute such operations as this I propose, without the consent of a proper medical consultation: this is a matter of such great import to us all, that I consider it to be incumbent on the American Medical Association to take such order upon it as their wisdom may suggest. To lose a patient under any circumstances, is a source of grief to the practitioner; but to lose one subjected, without consultation, to the operation in question, can only be fitly denoted as a disaster. Our diplomas endow us with authority to practise within the rules of an art—and it ought to be enacted as a rule of practice not to do these things without consent of a consultation. Such a rule would probably restrain much looseness of conduct on the part of some of the brethren; and might go even so far as to improve their morals, as is the admitted tendency of all salutary laws. I trust that you, Mr. Editor, who are a leader in things practical and æsthetical in our calling, will readily agree with me that it is neither safe nor decent for any single physician to order and perform one of these operations. Such sentiments, if known to be held by your great and powerful press, would do more good, perhaps, in the way of purging our brotherhood

from these defilements, than half a dozen convictions and sentencings by the law courts.

Though I have already drawn out this note to a greater length than I designed, I ought not to omit the injunction of deferring the operation until after the period during which the ovum is covered up completely within its capsule called the decidua. Now, it is known that the whole ovum escapes from its deciduous investment or capsule at the one hundred and fifth day, or thereabout. If one would force on an abortion before that date, the deciduous capsule, which consists of the tubular glandular mucous membrane of the womb, must inevitably be ruptured or wounded, which is equal to a wound of the womb itself; but, after three and a half months the ovum, which is at that period wholly escaped from the decidua-capsule, may reasonably be expected by means of the colpeurysis to be expelled whole and unbroken, in which case the risk to the woman is much diminished, not only because the entire product of the conception is thus eliminated, but also because no needless and hazardous violence is done to the membrana decidua.

I am, my dear sir,
With the sincerest regard,
Your friend and servant,
CH. D. MEIGS.

ART. V.—*On the Treatment of Variola.* By CHRISTOPHER J. CLEBORNE, M. D., Ass. Surg. U. S. N.

DURING the early part of 1861, having a number of cases of smallpox under my care, I had a fair opportunity of testing the efficacy of the general plan of treatment recommended in this paper. Most of the cases occurred in the southern portion of the city, and amongst the poorest class of people, the greater number of whom, owing to the present unfortunate troubles of the country, were unable to obtain employment, and in consequence lived in the greatest state of destitution. I mention this fact to show that in many instances the chances of recovery were considerably lessened, and even after the disease had run its course, convalescence was necessarily retarded from a want of proper food and attention. Notwithstanding these disadvantages, out of forty-three cases of confluent variola treated by the administration internally of the chlorate of potassa, and the local application of the plasma potassii iodidi, but three cases terminated fatally. It may be well to state here, that of thirty seven cases of which the writer took notes, six had been previously vaccinated, and the scars were still visible.

1 had been vaccinated 23 years previously.
1 " " 15 " "
1 " " 9 " "
2 " " 5 " "
1 " " 2 " "
31 were unvaccinated.

This table proves, to some extent, that vaccination is not in all cases a certain protection against the disease, and that its protective influence cannot be depended upon for any specified time.

In two instances the disease was ushered in by convulsions; another case presented some of the symptoms of meningitis, which ceased immediately upon the appearance of the eruption. One patient (a female) complained of excruciating pain in the course of the spine, a complete loss of voice, and severe circumorbital pain, accompanied by excessive sensitiveness of the eyes, when exposed to light. The rest of the cases presented the usual premonitory symptoms of the disease.

The writer did not meet with a single case of variolous ophthalmia, but observed that when the efflorescence was of a dark or livid colour, accumulations of pseudo-membranous matter in the mouth and fauces, painful furuncles, and obstinate diarrhœas, were more apt to occur in the course of the disease. It has been said, that the effect of the contagion of variola does not depend upon the particular grade of the communicating case, and the truth of this observation was exemplified in two cases of the confluent form, both of which were contracted from a mild case of diffluent variola in the stage of convalescene.

In one of the vaccinated cases, notwithstanding the copious eruption, no secondary fever appeared, and the disease ran its full course in thirteen days; afterwards a severe diarrhœa set in which finally yielded to the liquor ferri pernitratis in the usual dose.

I will now pass to the consideration of the various topical agents, which have heretofore been found to answer best the purpose for which they were proposed, and will then briefly state the principal objections to their use.

The Arabian physicians adopted the plan, of opening the pustules with a finely pointed instrument, squeezing out their liquid contents, and then washing them with warm milk and water or some anodyne lotion; this method though tedious, was very successful. Dr. G. B. Wood has suggested the opening of each vesicle by means of a sharp probe or lancet, and then touching them with a finely pointed stick of nitrate of silver. (*Practice of Med.*, vol. i. p. 402.) Bretonneau and Serres recommend the nitrate of silver in solution, applied over the whole surface, but it has been found that suppuration continues under the blackened cuticle, allowing the ulcerative action of the confined matter to continue undisturbed. This is the great objection to the use of collodion, or other applications of a similar nature. Involving the pustules in olive oil, or honey, and covering

them with small coloured glass cups, so as to exclude air and light (Serres, *L'Union Médicale*, 1848) has not been found to answer in practice. Dr. Bennett, of Edinburgh, has used calamine and olive oil, with some success. Iodine was first used for this purpose, by Crawford, of Montreal, and has been found useful in the hands of many practitioners. Broussais speaks very highly of the use of blisters, and more recently Mr. Startin, of London, succeeded in producing abortion of the pustules, by touching them with acetum cantharidis (L. Ph.) until a blister was produced. The use of mercurial ointment for the purpose of producing a resolution of the papulæ, or to abort the pustules, was first recommended by Briquet, and has been found more effectual perhaps than anything else; many objections are made to its use. The danger of salivation when used for any length of time, its unsightly appearance, the difficulty found in removing the unctuous matter from the surface of the skin and the soiling of the linen and bedclothes, thus adding to the discomfort of the patient, have caused it to be superseded by glycerin, which has been found less disagreeable, and quite as effectual in its application. I need hardly say, that similar objections may be made to the use of sulphur and other ointments, while the pain arising from the application of the nitrate of silver or blisters will prevent their being used in most cases for this purpose.[1]

It is now, I believe, conceded by all dermatologists, that the cause of pitting in smallpox is due to the disintegration of the derma or true skin, by the corrosive action of the virus contained within the pustule, or, more properly speaking, to that portion of matter inclosed in a small sac, in the centre of the pustule. The writer is inclined to believe, from observation, that this lesser sac is formed from the disk of whitish pseudo-membranous matter found on the upper surface of the derma, and which in the earlier stages of the eruption is adherent to the inner surface of the cuticle, and less firmly attached to the cutis beneath. During the progress of the eruption, a clear albuminous fluid is exuded, which in a short time becomes turbid, and is finally converted into pus. This liquor gradually separates the disk from the true skin, and from its attachment to the epiderma, after which the edges of the disk unite together, or more frequently to the inner surface of the cuticle, inclosing within the sac thus formed a purulent matter, arranged in minute cells like an orange. This matter being more acrid than the fluid by which it is surrounded, is said to be the cause of ulceration of the tissues, or pitting. To obviate the effects produced by this acrid matter, we must endeavour to prevent maturation of the pustules, or by some means get rid of their contents, before ulcerative action takes place.

The resolvent properties of the iodide of potassium suggested it to the

[1] [For some interesting remarks on various modes of preventing pitting in smallpox, see preceding No. of the Journal, p. 229.—EDITOR.]

writer as an agent from which might be derived all the advantages heretofore obtained from the use of mercury, iodine, or blisters. He has been much pleased with his success in the use of this remedy as an external application, and is convinced of its value from observation and experience.

In recommending the following formula to the notice of the profession the writer begs to claim for it a fair and impartial trial; having found it successful in his own practice, he is the more confident of its good effects and success in the hands of more skilful and experienced practitioners: ℞. Potassii iodidi ʒxij; maranta ʒj and ℈j; glycerin fʒij; ol. bergamii gtt. xl. Divide the glycerin into three equal parts; in the first portion dissolve the iodide of potassium, using heat if necessary, and add the oil of bergamot; put the second portion of the glycerin into a porcelain capsule and heat it over a water bath; then mix with the remaining portion of the glycerin the arrowroot, triturate well in a glass mortar, and gradually add it to the boiling glycerin while cooling; it should be stirred with a glass rod continually and the solution of iodide of potassium added by degrees, until the mixture becomes of a transparent appearance and of the consistence of jelly.

The plasma may be applied by means of a camel's-hair pencil, of the size usually sold as throat brushes. As soon as the eruption makes its appearance it should be used, and repeated applications made throughout the day and night. A mask of oiled silk may be placed over the face, but is not by any means necessary. The face may be cleansed when the pustules burst by sponging with tepid water; it would be well to do this frequently for the sake of cleanliness, the comfort of the patient, and the success of the application.

The strength of the preparation should be increased or decreased as the practitioner sees fit, and according to the circumstances of the case, the age and tenderness of the skin being at all times considered. To the discutient properties of the iodide of potassium may be attributed its effect in producing a resolution of numbers of the indurated papulæ, while at the same time it checks the advance of others into the vesicular stage, its good effects upon the eruption in the advanced stages is due to its producing a partial solution of the epiderma, so that when the pustule is fully formed, the pus contained therein can easily burst through the softened cuticle, and by this means the ulcerative action of the virus on the cutis vera is effectually prevented.

I will now proceed to make a few remarks upon the internal administration of the chlorate of potassa in the treatment of variola.

On discovering the nature of the disease, I commence the treatment by giving the powdered chlorate of potassa in doses of one to two drachms every two hours, mixed with honey, or in combination with the effervescing draught or neutral mixture. The writer is aware that the use of heroic doses of this salt may be considered by some as unnecessary and likely to

produce injurious consequences, especially when continued for a length of time, but this has not been his experience; on the contrary, he has given it in half ounce doses frequently repeated, and always with the happiest effect. In fact, experience daily proves to us that in order to obtain the proper effects of nearly all medicines, they must be administered in much larger doses than is at present done.

During the whole course of the disease I continue the use of the chlorate of potassa, but decrease the dose on the return of the secondary fever. I find that it answers all indications, and besides its refrigerant effects it acts also as a tonic, giving new vigour to the enfeebled system.

The painful excoriation and plugging up of the nostrils of young infants may be remedied to some extent by an early and daily use of a solution of tannin in glycerin, applied to the inner surface of the nostrils.

To relieve constipation, the bisulphate of potassa is preferable to any other cathartic on account of its tonic effects, and mild yet efficient action. In the obstinate diarrhœas which sometimes set in, the writer has found the liquor ferri pernitratis succeed after other astringent remedies had failed.

The solution of chlorinated soda recommended by Dr. G. B. Wood, is the best application that can be made to the pseudo-membranous matter in the fauces.

Baths containing vinegar are of use in preventing contagion, and become very grateful to the patient.

During the course of the disease, the diet should be light and nutritious; and after the fourteenth day small doses of quinia and proto-carbonate of iron, or nux vomica and tincture of the chloride of iron may be given. Excessive restlessness or pain may be relieved by syrup of lactucarium or an opiate.

Among other essentials may be mentioned a large well-aired room, rest, and a lightly-covered bed.

ART. VI.—*On Fracture of the Astragalus.* By JOHN ASHHURST, Jr., M. D., Resident Surgeon to Pennsylvania Hospital.

ON Sunday, the 17th of November, 1861, a man was admitted into the Pennsylvania Hospital, suffering from an injury equally serious and unusual. He had been drinking to great excess for about a month before his accident, and in a dream, during his drunken sleep, jumped from the window of his room, in the fourth story of a lodging-house, alighting squarely on his feet, and subsequently on his right hip.

When I first saw him, a few hours after his fall, the right foot was much swollen, with a great subcutaneous effusion above and in front of the external malleolus. Below, and slightly posterior to the malleolus

was a hard, bony protuberance, apparently immovable, and which had no fellow on the opposite foot. The hip was merely injured by contusion.

The motions of the foot were unimpaired. The fingers could press upon the head of the astragalus without giving pain, and but for the bony protuberance below the malleolus, a mere sprain would have been diagnosticated. The position of this piece of bone over the os calcis, and its length, about one and a half inches, rendered it pretty certain that but one of two things could have happened, viz., fracture, with dislocation of the astragalus, or the same combination of injuries to the calcaneum; for, that any other tarsal bone could have got in that position, and yet—as will be seen in the sequel—be easily replaced, was not to be supposed. That it was not the calcis, was rendered probable by the immobility of the fragment, by the absence of deformity on the other side of the calcis, and by the absence of crepitus, and of pain on pressure; and when the fragment had been replaced, and subsequently remained without trouble in its restored position, it became daily more and more evident that the bone of the heel was uninjured.

The lesion was therefore as follows: the man had undoubtedly struck the ground while his foot was greatly adducted, thus widening as much as possible the space between the fibular malleolus and the calcis. The astragalus had been split into two portions, the larger remaining with the head and neck, in its normal position, and thus not preventing the usual motions of the foot, while the smaller and outer portion had been violently pressed out beneath the malleolus into the position it occupied when first seen.

The course of treatment to be pursued was somewhat uncertain. Rognetta, whose admirable monograph has been of very great use to me in preparing this paper, declares that luxation of the astragalus, complicated with fracture, universally requires exsection.[1] Yet an unwillingness to neglect the chance, however slight it might be, of effecting reduction, induced me, with the approval and assistance of my colleague, Dr. Charles C. Lee, to make the attempt, which both to my surprise and my gratification, was attended with complete success. While my colleague made firm counter-extension, by grasping the calf of the leg in both hands, I proceeded to the following manipulation. Extending the limb, and having gradually adducted the foot as much as possible, I placed both thumbs over the projecting fragment, and suddenly induced a position of abduction. After this manœuvre had been repeated several times, we heard the bone go in with a dull crushing sound, like that produced by straightening a bent bone. The protuberance had now disappeared, and the foot, except in being swollen, in every respect resembled its fellow of the opposite side. A compress was placed over the spot, lead-water and laudanum applied, and the limb confined to a fracture-box. When all heat had left the ankle, equable pressure

[1] Mémoire sur l'extirpation de l'astragale. Paris, 1843, p. 56.

was made by means of a soap plaster and bandage, and from this time forward any one seeing the limb, would have imagined nothing more than an ordinary sprain. On the 26th of December, nearly six weeks after the accident, pasteboard splints were applied, and the patient allowed to get up. He was discharged cured on Monday, January 20th, 1862, having been in the house sixty-four days.

This accident is very rare, and so favourable a result still rarer. Out of 1901 cases of fracture treated at the Middlesex Hospital, between the years 1831 and 1837, a period of six years, there were but two fractured calcanea, and one astragalus.[1] In the record of the Pennsylvania Hospital for the last ten years, I find four cases only recorded.

The first of these was a compound fracture of both astragalus and calcaneum, and was admitted on the 23d of August, 1857. The man was a hard drinker, and was injured by a fall from a second-story window. An effort was made to save the limb, and the dressing employed was the bran dressing of Dr. Barton. A great deal of sloughing ensued, and the patient died from pyemia on the 15th of the following September, having survived the accident twenty-three days.

Another case, also a compound fracture, and complicated by fracture of both bones of the leg, was admitted on the 12th of November, 1858. This man, too, was a drunkard, and was run over by a car on one of the passenger railroads. In this case amputation was performed by the circular method, by Dr. Norris, but the man died one week subsequently, also from pyemia.

The third was a compound fracture, in which the internal malleolus was also involved. An attempt was made to save the limb by means of irrigation, the limb being placed on an inclined plane. Subsequently, however, amputation was performed at the knee-joint, and the man died from prostration, twenty-four days after admission. This patient entered the house on the 16th of May, 1860, his leg having been crushed by a heavy stone; previous to his death, a large abscess formed in the opposite leg.

On the 5th of July of the same year, still another compound fracture of the astragalus was admitted, which was treated in a fracture-box, with a wash of Goulard's extract, and extract of belladonna. This treatment was perfectly successful, the patient leaving the house cured after seventy-five days. This also was a railroad accident.

It will be observed that in none of these cases was the fracture simple, and, in all but the last very seriously complicated. Hence, mine is the only case of simple fracture of this bone received in the Pennsylvania Hospital for ten years at least.

Another curious circumstance is the cause of death in the fatal cases.

[1] Lonsdale, Treatise on Fractures, p. 18.

The two first are recorded as dying, one of pyemia, and one of purulent infection; while the third is said to have died of prostration, but at the same time it is mentioned that a large abscess formed in the right leg (the one not injured), previous to death.

Of the three that died, one survived only a week; the others twenty-three and twenty-four days respectively.

In the second case, the fracture was through the centre of the body; in the other, the direction is not recorded.

In none of these cases is it stated that there was any displacement. In mine, it will be remembered the dislocation was downwards, outwards, and backwards. I have been able to find recorded but one other case in which the dislocation was in this direction. This was Mr. Turner's case, treated at the Manchester Infirmary, in 1841, and detailed in his very valuable paper on *Dislocations of the Astragalus*, in the 11th volume of the *Transactions of the Provincial Medical and Surgical Association*. This was a compound luxation, and the entire bone was thrown out of place, without fracture of either tibia or fibula. Reduction not being practicable, exsection was performed, and the patient recovered in about seven months.

From an examination of the relations of the fibula to the tarsus, it would appear that such a large portion of bone could hardly get out between the malleolus and the calcis; yet also in Rognetta's celebrated case, the whole astragalus was thrown out, while neither malleolus was injured.[1] In some cases the astragalus is found completely inverted, as in Dupuytren's case of forward dislocation.[2]

In such a case, of course all attempts at reduction would be futile, and an operation would be the only means of procedure to relieve the displacement. This particular form of luxation may, according to Rognetta, sometimes be recognized by the lengthening of the entire foot, due to the astragalus being fixed between the tibia and calcaneum.

The ordinary direction in which the astragalus is luxated, either entire or a fragment, is downwards and forwards, and hence Rognetta declares that the tibia must be almost in a line with the tarsal bones to permit such luxation to occur, and suggests falling upon an inclined plane, with the heel higher than the toes, as the usual cause of this accident; but in my case the fragment was behind, not in front of the malleolus, and hence, I suppose the patient to have fallen upon an almost plain surface, with, perhaps, the toes a little higher than the heel.

Simple luxation of the astragalus is only likely to occur in young and vigorous subjects; as in the old, the malleoli would be more apt to give way than to manifest the elasticity which this luxation requires of them.

There are so few cases recorded in which luxation has been accompanied with fracture, and yet reduction effected, that it is very hard to know what

[1] Op. cit., p. 2.

[2] Diseases and Injuries of Bones, Lond. Syd. Soc., p. 204.

to say as to the prognosis in such a case. Lonsdale met with a case in which there was fracture (comminuted, however) without any displacement, and in which the real injury was not suspected till after death, which occurred within twelve days from the time the accident happened. Rognetta twice saw simple fractures of the astragalus, but in neither was there any displacement; they both made excellent recoveries.

Dr. Bernard Monahan has collected ten cases of fractured astragalus, nine of which were accompanied with dislocation, and eight of which were compound, but Hamilton, who refers to Dr. Monahan's paper, does not specify the result in any of the cases. Hamilton, himself, has "never met with a simple fracture of a tarsal bone accompanied with displacement."[1] Dr. Norris had a case in the Pennsylvania Hospital in 1831, where there was simple fracture with dislocation downwards and forwards; here, as reduction could not be effected, the fragment was excised by Dr. J. Rhea Barton; caries, however, ensued, and the limb was amputated with a fatal result more than eighteen months after the occurence of the injury.[2] Rognetta, in commenting upon this case, thinks that had the whole astragalus been removed in the first place, the result would have been different.

Fabricius Hildanus is the first author who gives a clear account of these injuries: he mentions an instance in which recovery took place after extirpation of the bone.[3] Ambrose Paré confused this luxation with that of the entire foot.[4] Desault saw several cases of dislocated astragalus, in one of which reduction being impossible, he cut down and divided the capsule, thus removing the obstacle to the bone's resuming its place. The result was favourable.[5] Dupuytren met with ten or twelve cases of luxated astragalus, in some of which reduction was easy, in one, could only be partially effected, and in several of which he performed exsection of the bone.[6]

Malgaigne mentions two or three cases of fracture of the astragalus, but does not record any as occurring in his own practice.[7]

From a theoretical consideration of the matter, it would seem that either simple dislocation or simple fracture would promise better results by itself than when complicated with the other; but if reduction can be effected in a case such as mine, of course, thereafter, it becomes a simple fracture. And hence reduction should be at first attempted as a matter of course, unless the lengthening of the foot should show that complete inversion of the astragalus had taken place. Should reduction be impossible, I should be inclined to follow Desault's example, and by the assistance of the knife, facilitate the restoration of the displaced bone.

[1] Pract. Treatise on Fractures and Dislocations, p. 479.
[2] Am. Journ. of Med. Sci. for August, 1837.
[3] Opera. Cent. II. Obs. 67.
[4] Opera. Lib. XIV. Cap. 24.
[5] Œuvres Chirurgicales, tom. I.
[6] Diseases and Injuries of Bones. Syd. Soc. translation, pp. 316–325.
[7] Treatise on Fractures. Packard's edit.

In a compound fracture or luxation, it would also be good practice, provided the injury to the soft parts was not excessive, to attempt reduction. If, however, the laceration were very great, or if it were found impossible to effect reduction, exsection would offer the best chance of success. After reduction in a compound luxation, union by the first intention might be aimed at, though it most probably could not be obtained. After the operation of exsection, I should suppose it scarcely worth while to make the attempt.

In no contingency would I be disposed to allow the bone to remain unreduced: inflammation, sloughing, and destruction of the joint would most probably ensue, and, under any circumstances, a lame and useless limb would be likely to remain.

Carious bone within a joint would prove a foreign body of the worst description, and the experience of military surgeons must be remembered, that any foreign body in a joint is much more dangerous than a free incised wound with all its risks of the admission of air to the synovial membrane.

The prognosis of the operation of exsection is very favourable. Heyfelder reports sixty-seven cases of exsection of the astragalus, of which fifty-eight resulted successfully, while in only nine was there a fatal issue. Heyfelder's statistics are referred to in the number of the *Medical and Surgical Reporter* for Nov. 30, 1861.

Amputation, which in Gooch's time,[1] was regarded as almost the only remedy in these cases, it need hardly be said, should never be performed for the lesion of the astragalus alone. In those horrid railroad accidents which are so often seen in city hospitals, in which the whole foot is crushed, of course there is no other chance presented of saving life.

ART. VII.—*On the Colour Tests of Strychnia, as modified by the presence of Morphia.* By ROBERT P. THOMAS, M. D., Professor of Materia Medica, in the Philadelphia College of Pharmacy.

DURING the last few years, the attention of the profession has been attracted to the consideration of the various means which have been recommended for the detection of strychnia in cases of poisoning by that powerful agent; and some of the ablest minds of Europe, and of this country, have contributed the results of their labours to the common stock of knowledge on this important point. Having received a thorough investigation from such hands, and its relations traced in almost every possible combination

[1] Chirurgical Works, vol. ii. p. 360.

or association, and the tests of its presence—both physiological and chemical—having been proved to be alike clear and distinctive, it would appear probable that little more could be added towards the perfection of its history.

Nevertheless, a question of great moment has recently arisen, as to the possibility of detecting it at all, if the poison should be associated with an equal, or a greater quantity *of morphia, or a salt of morphia in the presence of an organic fluid.* An able and exceedingly valuable paper on this subject was published in a late number (Oct. 1861) of this Journal; and another article on the same is to be found in the *Ohio Med. and Surg. Journal*, for September, 1859.

The property, referred to morphia when combined with organic matter, of preventing the detection of strychnia by colour-tests, will, if confirmed, afford a satisfactory explanation of the difficulty experienced by Drs. A. S. Taylor, and G. Owen Rees, in their examination of the viscera of J. P. Cook, as elicited on the celebrated trial of William Palmer for his murder, in England in May, 1856. They could not detect a trace of strychnia, notwithstanding the symptoms antecedent to Cook's decease pointed unequivocally to this alkaloid as the fatal agent. If not decomposed, it must have been masked by the presence of morphia, as Mr. Bamford, the attending physician, administered half a grain of this narcotic, each night, for three successive nights previous to his decease. The circumstances of this trial, and the experiments, described in the papers referred to, furnish an imperative reason for a further investigation of the subject; as the suicide or murderer can destroy all traces of his work, by simply combining an excess of morphia with a poisonous dose of strychnia. The former will not delay the fatal action of the latter, but on the contrary, will rather aid it.

With the view of determining the important question, whether strychnia is actually decomposed when treated with test-agents in the presence of morphia, or whether it is merely masked by such presence? I have performed more than a hundred experiments, of which an account of a few of the most valuable and satisfactory is now submitted. Premising that, in the examination of minute portions of strychnia, success or failure depends entirely upon the care given to the details. In all of my experiments I employed crystals of the pure alkaloids, and of their salts.

The "colour-tests" referred to in this paper, are those furnished by bichromate of potassa, or by the ferricyanuret of potassium (red prussiate of potassa), when added to a portion of strychnia previously dissolved in a drop of strong sulphuric acid. The discrepancies in the results of the published experiments of different observers depends, I think, in a great measure, on their diverse modes of procedure, and therefore I feel justified in giving a precise account of—

THE MODE OF TESTING.—In every instance the material to be tested was employed in the solid form, such as the pure alkaloids or their salts. If it

existed in solution, it was reduced to a solid consistence by evaporation in a test capsule, spontaneously, or by a very gentle heat. Having thus procured a solid substance, a small portion of it was placed upon a white plate, a drop of strong pure sulphuric acid was added, and trituration was carefully made with a glass rod until the substance was dissolved. Then a small quantity of powdered bichromate of potassa, or of powdered ferricyanuret of potassium, was deposited on the plate, *near the acid mixture but not touching it*, and to the powder a minute drop of water was added—just enough to partly dissolve it—and then, with a pointed glass rod, a little stream was drawn from each of the solutions in such a direction as to cross each other. Immediately at the point of intersection the play of test-colours was beautifully manifested. When the bichromate was employed, the sequence of colours was blue or violet, instantly changing to purple, then gradually becoming red, and finally greenish-yellow. When the ferricyanuret was used the colour was a rich bluish-purple, changing rapidly to a light rose-red. It is important to proportion the sulphuric acid to the amount of alkaloid, avoiding an excess beyond what is necessary to its perfect solution; and therefore it is better to take the acid out of the bottle by a pointed glass rod, rather than to drop it from the lip.

The first series of experiments was instituted for the purpose of determining how far pure morphia or one of its salts, when combined with strychnia, would prevent the manifestation of the colour-tests.

Expt. 1. Accordingly, equal weights of the pure alkaloids were rubbed together in a mortar and tested; next, one part of strychnia to three parts of the sulphate of morphia; then one of strychnia to four of the acetate of morphia; then one of strychnia to eight, and finally, one to twenty parts of the sulphate of morphia. In each case the result was entirely satisfactory; the colour-test flashing out, with more or less distinctness in proportion to the relative quantity of morphia, as soon as the margins of the two solutions on the plate came into contact. As intimated above, one solution was made by rubbing the powdered bichromate with a drop of water, the other by triturating a portion of the morphia and strychnia with a drop of sulphuric acid, being careful to use just sufficient acid to insure a perfect solution. I did not consider it necessary to carry this experiment any further, because, in a case of poisoning in which the morphia should be twenty times greater than the strychnia, the fatal result and the attendant symptoms would probably be more characteristic of the action of the former than of the latter, and our experiments would be devoted to its detection.

Expt. 2 was an exact duplicate of the first in all of the varied strengths of the two articles, with the simple difference of having them in solution in water acidulated with acetic acid, instead of being in the solid form.

To obviate the necessity of a subsequent concentration of the solutions

by heat, the salts or alkaloids were macerated in small measures only, of acidulated water, and to each solution an excess of a solution of potassa was added, and then an equal measure of chloroform, which dissolved out the strychnia, and subsequently yielded it as a filmy deposit in a capsule, by spontaneous evaporation.

With sulphuric acid and bichromate of potassa, the proper test-colour was manifested by the deposit in each case.

In my opinion, these experiments determine conclusively that strychnia can be detected by colour-tests, even when masked by morphia—either as the alkaloid or one of the salts—to the extent of twenty times its own weight.

But the question raised is not so much, whether strychnia will be masked by pure morphia or its salts, uncontaminated with anything else, as whether *morphia in the presence of organic mixtures* has the power of preventing the recognition of strychnia by the usual colour-tests. To determine this latter point, my attention was directed in the next instance, to the devisal of a simple and practical method, by which its recognition could be secured. Upon reflection, I concluded that the most feasible plan of overcoming the difficulty, would be to separate the poison entirely from the organic mass, by chemical agents and solvents.

After careful investigation and repeated trials, I selected as the agents the three fluids used in experiment 2. These fluids can always be obtained at trifling cost, of easily ascertained strength, and of known purity. They are, 1. Acetic acid, of the specific grav. 1.041. 2. A solution of one drachm of caustic potassa in a fluidounce of water. And, 3. Chloroform.

Acetic acid was chosen, because, when in excess, it has the property of dissolving all of the ordinary salts, both of morphia and strychnia, as well as their tannates, which are generally described as being insoluble; and, therefore, by treating an organic mass containing these alkaloids with this acid, we would obtain a solution of the acetates of morphia and strychnia.

The solution of caustic potassa was selected for several reasons. For instance, in neutralizing the acetic acid it forms a soluble salt of potassa—thereby getting rid of the acid when we are done with it. It saponifies the fats of the organic materials; it decomposes their sugars; and it dissolves morphia, but does not dissolve strychnia, thus enabling us to separate the one alkaloid from the other by its agency.

Chloroform was resorted to, for its solvent and volatile properties. Thus, 100 parts of it, according to M. Pettenkoffer, at ordinary temperatures dissolve 20.16 parts of strychnia, and only 0.57 parts of morphia. A fluidrachm of it, holding the strychnia in solution, will evaporate spontaneously in a few minutes if placed upon a saucer or plate.

As the solution of potassa dissolves morphia and rejects strychnia, while chloroform has the reverse property of taking up the strychnia and

rejecting the morphia, it must be evident that the conjoint use of these fluids would effect an entire separation of the two alkaloids—the morphia being held by the potassa, and the strychnia by the chloroform.

Another important practical advantage in the use of these fluids is found in their different specific gravities. The chloroform, being the heavier, sinks to the bottom of the vessel containing them, and thus a separation is easily accomplished.

The eliminating properties of the three fluids were determined in the following way:—

Expt. 3. One grain of strychnia and three grains of opium were macerated for three days in a mixture of equal measures of acetic acid and water; then filtered, and to the clear liquid equal bulks of the caustic solution and chloroform were added, and the whole well shaken together. Upon subsidence, the chloroform was separated, and a part of it evaporated on a plate. The deposit, thus obtained, was treated with sulphuric acid and the bichromate of potassa, in the manner before described, when a fine play of test-colours resulted.

In this and the subsequent experiments, care was always observed to have the caustic solution in sufficient excess over the acetic acid to dissolve the morphia, and leave the solution alkaline to test paper.

Having thus determined the practicability of regaining the strychnia, in a separate state, from a solution in which it had been associated with the various alkaloids of opium, I proceeded, in the next instance, to the examination of its relations to morphia in the presence of organic matter. For this purpose a nutritive mass was prepared as the representative of the contents of a man's stomach, if death should occur soon after a meal. The mass consisted of two ounces of minced-meat (such as is used for pies, and containing meat, suet, various dried fruits, cider, spices, and a little brandy), two ounces of bread, a portion of salt, pepper, and vinegar, and two fluidounces of a strong infusion of coffee, well-sweetened. In other words, an association of the nitrogenous and non-nitrogenous elements of food, with spices, alcohol, tannic acid, and caffein. To this mass, one grain of strychnia and five grains of morphia, which had been previously well triturated together and dissolved in a mixture consisting of one fluidrachm of vinegar and fifteen fluidrachms of water, were now added, and the whole carefully mixed. The mixture was set aside for twenty-four hours to permit the alkaloids to permeate the entire mass, and it was then divided into four equal parts. Each part being made the subject of an experiment, as follows:—

Expt. 4. The first portion, containing one quarter of a grain of strychnia and one and a quarter grains of morphia, was treated with f℥ij of acetic acid (1.041), and f℥iv of water. The mixture having been allowed to

stand for sixty hours, was raised to the boiling point and ebullition was maintained fifteen minutes. Having been strained and filtered, equal quantities of chloroform and the caustic solution were added to the filtered liquid; the whole were well agitated together, and after subsidence, the chloroform was separated and evaporated. Upon treating the deposit with sulphuric acid and ferricyanuret of potassium the distinctive play of colours appeared.

This experiment proves that strychnia is not decomposed by a heat of 212°, maintained for a short period, even though morphia and organic matter be present. The elevated temperature is objectionable, however, from the large amount of starchy matter dissolved by the boiling water, which clogs the subsequent steps of the process.

Expt. 5. The second portion, containing the same amount of alkaloids as the preceding, was macerated twelve hours in f℥ij of acetic acid, and f℥ij of water, then strained with pressure and filtered. The resulting liquid was treated with equal measures of chloroform and the caustic solution. The deposit from the evaporated chloroform yielded the proper colours with the test-agents.

This, like many subsequent experiments, proves that it is unnecessary to employ heat; acetic acid, mixed with an equal measure of cold water, being amply sufficient for the extraction of alkaloids from an organic mass.

Expt. 6. The third portion was macerated, like the preceding, for twelve hours, in acetic acid diluted, and then pressed and filtered. The resulting liquid was placed in a capsule before the register of an ordinary house-furnace, and was evaporated to a syrupy consistence by the warm air passing over its surface. To this, the chloroform and the solution of caustic potassa, in equal measures, were applied, and all well mixed. The separated chloroform yielded a deposit which was proved to be strychnia by the test-agents.

By this experiment, we learn that a solution containing both alkaloids in contact with organic matters may be evaporated, by a moderate heat, almost to a solid consistence, without their decomposition.

Expt. 7. The fourth portion was set aside for twelve days in a room having a temperature of 68° to 70°. At the expiration of this period, the mass had become sour and offensive, and was spotted with crusts of mould. It was then macerated for twelve hours in a mixture of f℥ss of acetic acid, and f℥jss of water. After which it was strained, filtered, and evaporated, like the preceding, to the consistence of syrup, by the passage of a current of warm air over the surface. As the resultant liquid was intensely sour as well as bitter, I added two measures of the caustic solution and one of chloroform, and agitated the mixture as in former cases. When the chlo-

roform was separated, and a part of it evaporated in a capsule, the most beautiful and distinctive colours appeared after the employment of the proper tests.

This experiment was instituted for the purpose of ascertaining whether strychnia is liable to undergo any change in the presence of organic matter by the lapse of time, even where that matter has fermented and exhibited evidences of incipient decomposition. The result affords a strong inference that it could be detected in the contents of the stomach after a body had been deposited several days in the grave.

I carried this experiment a step further with a view of determining whether morphia could also be regained from an organic mixture in a state of commencing decomposition. Consequently, after separating the chloroform and caustic solutions from each other, I added acetic acid to the latter, drop by drop, until it was neutralized. Then a solution of tannic acid was added, and the precipitated tannate was collected and dissolved in acetic acid. The solution afforded a red colour with nitric acid, and a rich blue colour with the persulphate of iron, and was, moreover, very bitter to the taste. Thus establishing, conclusively, the presence of morphia.

Having entirely satisfied my own mind, by the foregoing experiments, that no inherent difficulties exist in the detection of strychnia by the colour-tests when it is associated with morphia and involved in a great mass of animal and vegetable matters, I might with propriety dismiss the subject. But as so large a quantity as a grain of the poison might not be found in the stomach after death, in consequence of the use of emetic remedies, or the partial absorption of what had been swallowed, I concluded to try the process on a much smaller scale, and accordingly performed, as follows—

Expt. 8. Two ounces of minced-meat (similar to that used in experiments 4, 5, 6, and 7), and two ounces of bread, were macerated eight hours in four fluidounces of water, holding in solution one-hundredth of a grain of strychnia, and one-thirty-third of a grain of the sulphate of morphia.[1]

Half a fluidounce of acetic acid, with an equal measure of water, was added, and the mixture set aside for six hours. It was then strained, with pressure, and filtered. The remaining clear liquid was divided into two portions, *a* and *b*.

One portion (*a*) was placed in a capsule in a current of air at 70°, and thus evaporated to a syrupy consistence. It was treated with the caustic solution and chloroform, as in the former cases; and, upon the careful application of the tests to the film obtained by evaporating the chloroform,

[1] These minute quantities were obtained with great accuracy by dissolving one grain of the former, and three grains of the latter, in fifty fluidrachms of water, acidulated by a few drops of acetic acid. Half a fluidrachm of this solution contained gr. $\frac{1}{100}$ of strychnia and gr. $\frac{1}{33}$ of the sulphate of morphia.

clear and undoubted evidences of the presence of the poison were afforded by a transient yet distinct play of colours.

The other portion (*b*) was treated directly with a measure of chloroform and two measures of the caustic solution. After mixing these carefully together, the chloroform was drawn off, placed in a capsule, and evaporated spontaneously. A very delicate filmy deposit, of a white colour and bitter taste, was observed in the capsule. A part of this gave, with sulphuric acid and ferricyanuret of potassium, a distinct but evanescent change of colours, indicating positively the presence of strychnia.

To determine more satisfactorily the precise nature of the deposit obtained from this experiment, I evaporated, upon a slip of glass, drop after drop of the chloroformic solution until an appreciable deposit was procured, and to this a drop of dilute nitric acid was added. When dry, it was placed under a microscope at a magnifying power of 100 diameters, and a crop of well-defined crystals of the nitrates of strychnia and brucia was apparent.

This experiment proves conclusively that strychnia in minute quantities can be regained from organic mixtures, notwithstanding the presence of three times its weight of the sulphate of morphia.

In conclusion, I may be permitted to offer to those who shall be called upon to determine the presence or absence of strychnia in cases of suspected poisoning, a few practical suggestions, viz:—

1. In testing for minute portions of the poison, success or failure depends entirely upon the care given to the details of the process.

2. In examining the contents of a stomach, the employment of heat is not required for the detection of strychnia, nor should any unnecessary fluid be added which might require subsequent evaporation. Equal measures of acetic acid and cold water, in sufficient amount to thoroughly acidulate the mass, are all that is requisite to extract any alkaloids or their salts that may be present, and, to insure success, these must be reduced to the solid state.

3. In the application of reagents for the production of the colour-tests, care should be observed not to add any more sulphuric acid to the strychnia than what is necessary to dissolve it; and, in like manner, the powdered bichromate of potassa, or ferricyanuret of potassium, should only be moistened, as by touching a glass rod with the point of the tongue and then rubbing it over the powder. In this manner, two saturated solutions or mixtures are obtained, which show the play of colours as soon as their margins are brought into contact, even though the quantity of alkaloid present be very minute.

ART. VIII.—*Observations on Obscure Brain Disease, with an Illustrative Case.* By N. NIVISON, M. D., of Burdett, Schuyler Co., N. Y.

THERE is, perhaps, no department of medicine presenting such imperative and legitimate claims to our attention, which has been so much neglected as that of *cerebral pathology*.

Numerous cases falling within this category, and threatening the most serious consequences, are, it is feared, too often overlooked or misunderstood by the medical attendant.

Many of these cases, tending either to insanity or mental imbecility, it is confidently believed, would be entirely amenable to well-directed therapeutics if their true character were seasonably recognized.

Brain disease may be *inferred* from disordered cerebral sensibility. It is *demonstrated* by disordered mental action. Were we at all times able to define precisely where healthy intellection ends, and where disordered intellection begins, the diagnosis of the incipient stages of certain obscure forms of brain disease would be comparatively easy. But in the present state of our knowledge this is difficult, often impossible.

I can but hope that a subject which underlies such a vast amount of misery, both physical and mental, and which so forcibly addresses itself, not alone to the physician, but also to the moralist, the jurist, and the philosopher, is about to receive the meed of attention to which, by virtue of its importance, it is so justly entitled.

With the hope of directing the attention of more able observers to this much neglected subject, I offer a brief statement of the following illustrative case.

In September last, while practising in the village of Yonkers, I was consulted by a gentleman, apparently about 35 years of age, of nervo-sanguine temperament, who gave of himself the following history: He is a New York merchant, business relations extensive, both here and on the other side of the Atlantic. Has always enjoyed excellent health until last spring, at the time of the "panic;" when his business gave him much anxiety. He soon after began to experience very strange sensations in the head, but as they were only momentary, and occurring but three or four times a day, he gave them little attention. Soon, however, they became more frequent, recurring at any time, and especially when a little extra exertion or close thinking was required. On the days of the arrival and departure of the European steamers it was worse; riding in the cars would produce it. He could not add up a column of figures without feeling it, and when such was the case he lost his reckoning; was obliged to begin and make the addition over again. It was sometimes necessary to repeat this process again and again before the addition was complete. In de-

scribing this peculiar sensation, he could only say it was a "confused feeling," lasted for a moment and was gone.

It was, nevertheless, apparent that it was to him a subject of much anxiety and apprehension. Though he was scarcely aware of it himself, a very critical examination satisfied me that there was at each paroxysm a brief, though almost inappreciable period of time, in which there was loss of consciousness—for a moment the mind refused to act. An instant of mental confusion, a moment of forgetfulness, a sensation as if aroused from slumber; and the paroxysm was gone.

He confessed to a slight impairment of his usual energies, but otherwise, with the exception of these strange sensations, was as well as usual.

He had taken medical advice early, and at intervals since, both here, and in Europe, but without sensible relief. Hepatic torpor was at first suspected and prescribed for. Not getting the desired relief, it was suggested that his business was too severe a tax upon him. He was advised to travel. Went to Europe accompanied by his family. He spent some three months abroad, but did not improve. It is now six weeks since his return, during which time he has given some attention to business, and grown steadily worse, the paroxysms frequently occurring several times an hour.

I consented to take his case under advisement. For the first two weeks my treatment was entirely experimental.

I suspected the condition of the brain was one of atony, and more extended observation led me to believe that this atonic condition was due to some strange perversion, whereby *the nutrition of its tissue was inadequately performed.*

The salts of zinc, nux vomica, and a variety of other remedies were successively tried, with little or no relief. I then gave quiniæ sulphas gr. iss, ter in die. He immediately improved, the unpleasant paroxysms were much less frequent. The countenance became animated, and we began to entertain hopes of a speedy recovery. But in this we were doomed to disappointment. For although the "strange sensations" had now well-nigh disappeared, a new set of morbid cerebral symptoms immediately succeeded them. He now complained of *constant pain* in the head. This increasing in severity, became a source of much anxiety. At the end of ten or twelve days the quinia was discontinued; but the pain remained. A week later, the pain still remaining, I began to suspect a sub-inflammatory condition of the brain.

Acting upon this hypothesis, I ordered a pill of prot. iod. hyd. gr. ss, extr. hyoscyami gr. j, to be taken twice a day; at the end of a week he was greatly relieved. It was continued some two weeks longer, when he expressed himself as feeling better than in many months.

December 15th. The remedy has been used at intervals; he is now, to use his own language, "almost quite well."

If this case is remarkable, it is chiefly so for its obscurity, and the simplicity of the treatment to which it finally yielded. It was a problem which several eminent physicians both in this country and Europe failed to solve.

With much deference, I submit the following as its rationale.

The incidents of the "panic" imparted to the brain a condition analogous to what in surgical technology we denominate "shock." This not only produced temporary incapacity, but so far impaired the tone of its nutrient vessels as to produce permanent inanition; *ramollissement* would have speedily followed.

A merely overworked brain, still retaining its integrity, should have recovered during the protracted relaxation of the voyage to Europe.

The tonics restored the lost action to the nutrient vessels, the unpleasant paroxysms at once subsided. But the tonics did more than this, they produced excessive action, inflammatory even. This yielded to the silent and continued action of the alterative, and a healthy equilibrium was restored.

Had not remedies been successfully addressed to this case, I cannot resist the conviction that softening of the brain with mental fatuity would ultimately have resulted.

With Winslow, we are prepared to believe that "there are few morbid mental conditions so fatal in their results as these apparently trifling, evanescent, and occasionally fugitive attacks of mental depression."

TRANSACTIONS OF SOCIETIES.

Art. IX.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1861. *Sept.* 4. Dr. Reese made a verbal statement of the results of certain experiments, undertaken with a view to determine *the effect of the presence of morphia in disguising the usual colour-test for strychnia.* These experiments were based upon a case of alleged poisoning by strychnia, in which a man was indicted for the wilful murder of his wife, in Perry Co., Pennsylvania, in April, 1861. The stomach and a portion of the small intestine were examined by Dr. Reese for strychnia, eight weeks after the death of the woman; and although the most scrupulous care was bestowed upon the analysis—six or seven separate investigations having been made—no trace whatever of the poison could be detected, either by the colour-test, or from the bitter taste of the ultimate ethereal extract. The chemical processes employed were those known as Graham and Hoffmann's (in which animal charcoal is used to extract the alkaloid), the process of Staäs, and that of Prollius (in which chloroform is used as the ultimate solvent).

Now, as all the *moral* circumstances of the case, as well as the symptoms exhibited by the woman clearly pointed to strychnia as the cause of death, it became a matter of interest and importance to ascertain, if possible, if there was any adequate reason for the non-detection of the poison. There were several circumstances which, in Dr. Reese's judgment, might have explained this failure. First, the length of time (eight weeks) that had elapsed between death and the chemical examination; it being admitted by the best authorities, that organic poisons do undergo change in the body *after* death. Secondly, the rather unusual length of time (seven or eight hours) that the woman survived after taking the poison; it being clearly established that the alkaloids are very rapidly absorbed from the stomach and eliminated from the blood; consequently, in the present case, *all* might have disappeared before the examination was made. Thirdly, the fact, that the woman had taken, by the advice of her physician just before her death, *a quarter of a grain of morphia.*

It was this latter circumstance that led Dr. Reese to make his experiments, with a view to determine the question of how far the presence of morphia would interfere with the production of the usual *colour-test* for strychnia, when in contact with organic matters. We subjoin only the most striking ones.

Experiment 1.—The $\frac{1}{100}$th of a grain of strychnia was put into a pint of water, together with several ounces of beef, finely cut up, some starch, common salt, and a few drops of acetic acid (the object being, as nearly as possible, to represent the contents of a stomach after eating). The whole was subjected to moderate heat, strained, pressed, and evaporated, and finally treated after the process of Mr. Staäs. The ethereal solution, on being concentrated, yielded clear proof of the presence of strychnia, both by the colour-test and by the bitter taste. This experiment was intended to prove the delicacy and accuracy of the process that had been employed in the previous analysis of the stomach.

Expt. 2. This was a repetition of the last, except that to the $\frac{1}{100}$th gr. of strychnia there was added three times that quantity of morphia ($\frac{1}{33}$d

of a grain). Although the same process precisely was employed, not the slightest trace of strychnia could be discovered by the colour-test.

Expt. 3. This resembled Expt. 2, except that the $\frac{1}{50}$th of a grain of morphia was added to the $\frac{1}{100}$th of a grain of strychnia (or double instead of treble). Here, likewise, the *colour-test* entirely failed.

Expt. 4. In this case an equal amount of morphia only, or the $\frac{1}{100}$th of a grain, was added to the strychnia, and the same method pursued as in Expt. 2. The result was that the faintest possible evidence of the presence of strychnia was afforded, and only after repeated trials.

From these last experiments, Dr. Reese concludes that "*the influence of morphia in preventing the detection of minute quantities of strychnia in the presence of an organic fluid, depends upon the relative quantity of the two alkaloids, the strychnia not being discoverable when the morphia is in excess, and barely discoverable when in equal quantity.*"

As the results of numerous experiments made with various quantities of strychnia and morphia *in the pure state, i. e.* free from all organic mixture, Dr. Reese stated that not only is the difficulty of detecting strychnia greatly increased by increasing the *proportion* of morphia, but that the actual amount of it discoverable is nearly in an inverse ratio with the amount of combined morphia. For example, when the quantity of the two alkaloids was in the proportion of one to one, he was able to detect as small an amount of strychnia as the $\frac{1}{5000000}$th of a grain. From this, the minimum amount discoverable progressively rose with the increase of the proportion of the associated morphia, until the last experiment, made with one proportion of strychnia to twenty of morphia, when the smallest quantity that could be detected had increased to the $\frac{1}{50000}$th of a grain.

The amounts experimented upon were, purposely, extremely small, so as to afford fair conclusions in cases of actual poisoning.

In order more fully to settle this question, and to answer the objection that the result might possibly have been different if the two alkaloids had been in the stomach of a *living* animal, the following experiments were made: Half a grain of pure strychnia was administered to a cat, which died in convulsions in eleven minutes. The stomach, examined on the following day, by Staäs' process, afforded clear proof of strychnia by the colour-test. To a second cat, a quarter of a grain of strychnia, and the same quantity of morphia were given, and the stomach examined, as before. The faintest possible evidence of strychnia was obtained, exactly coinciding with a previous experiment made with the organic mixture. To a third cat, the $\frac{1}{50}$th of a grain of strychnia and the $\frac{1}{10}$th of a grain of morphia were given (double the quantity). Here there was a total failure to obtain the colour-test; although the bitterness of the extract, and the fact that the solution produced the characteristic tetanic convulsions in a number of frogs, distinctly proved its existence.

From all the foregoing evidence, Dr. Reese believes that his proposition is clearly established; and he calls the attention of the profession, and more especially of the toxicologist, to its importance in a medico-legal point of view.

In connection with the above, the extreme delicacy of the colour-test for strychnia was noticed, Dr. Reese having been able to determine less than the half-millionth of a grain, when free from organic mixture; and on some occasions, he had even succeeded in procuring the characteristic flash of blue colour, when operating with as minute a quantity as the *one-millionth* of a grain. Among the colour-producing or oxidizing bodies usually employed, he prefers the ferrocyanide of potassium (red prussiate) in conjunction with the sulphuric acid, as being, in his hands, the most delicate.

Along with the colour-test, Dr. Reese also noticed the extreme delicacy of the *physiological* or *frog-test*. He had made some interesting experiments with this test, with the twofold view of, first, establishing its comparative value with the colour-test; and secondly, of ascertaining how far the presence of morphia would interfere with its delicacy. Some of his results are here given :—

Expt. 6. A small frog weighing about 40 grains was immersed in a solution containing one grain of strychnia to twelve pints of water (one drop of which would contain the $\frac{1}{21\,5\,0\,0\,0}$th of a grain): tetanic spasms were produced in fifteen minutes.

Expt. 7. A solution of one-half the strength of the foregoing, in which one drop would represent the $\frac{1}{43\,0\,0\,0\,0}$th of a grain, produced decided convulsions in a frog weighing 29 grains, after half an hour's immersion.

Expt. 8. The $\frac{1}{5\,0\,0}$th of a grain of strychnia was put into the mouth of a middling-sized frog: it was convulsed, and died in about thirty minutes. The extract, obtained from the abdominal viscera by Staäs' process, although it afforded no perceptible colour-test, had a bitterish taste and produced tetanic spasms in several small active frogs.

In these experiments the frog was put into a small quantity of the solution—not more than about half a fluidrachm, so as simply to cover the hind legs and a portion of the body. The quantity actually absorbed through the skin must, necessarily have been extremely minute; hence the great delicacy of this test, and its value as a *corroborative* proof in medico-legal investigations.

As regards the question whether the presence of morphia would interfere with the value or delicacy of the frog-test, Dr. Reese's experiments clearly demonstrate the fact that morphia, which has been shown so completely to disguise the usual *colour-test* most fortunately produces no observable effect upon the delicacy of the frog-test. We subjoin a few results :—

Expt. 2. A frog weighing 40 grains was immersed in a solution containing one grain of strychnia and eight grains of morphia in twenty-four fluidounces of water, it exhibited tetanic spasms in five minutes.

Expt. 3. A frog weighing 100 grains was immersed in a solution containing one grain of strychnia and twelve grains of morphia in forty-eight fluidounces of water. It exhibited the usual tetanic spasms in fifteen minutes.

Expt. 4. A frog weighing 35 grains was immersed in a solution containing one grain of strychnia and thirty-two grains of morphia in six pints of water. It was convulsed in twenty minutes. Another animal rather smaller was affected in five minutes.

Expt. 5. A cat was poisoned by taking $\frac{1}{2\,0}$th of a grain of strychnia and $\frac{1}{1\,0}$th of a grain of morphia. The stomach on being analyzed by Staäs' process failed to yield the colour-test; but the watery solution of the extract produced the most decided tetanic convulsions in eight frogs, generally resulting in death.

The *bitterness of taste* of strychnia has also been the subject of experiment by Dr. Reese. He has found it to be decidedly the *most* bitter substance known. One drop of a solution containing a grain dissolved in five gallons of water, yielded a perceptibly bitter taste, equivalent to the $\frac{1}{5\,0\,0\,0\,0\,0}$th of a grain; and a solution containing one grain in twenty-five gallons of water, produced a sense of bitterness when a portion of it was forcibly rinsed in the mouth.

The bitter taste of the ultimate extract is an important corroborative proof of the presence of strychnia, in all supposed cases of poisoning; so

much so, that it is very questionable whether the *colour-test* can ever be obtained, where the extract fails to yield a bitter taste.

Dr. Thomas inquired if Dr. Reese had made any experiments with the frog-test upon the extract procured from the stomach of the woman I supposed to have been poisoned?

Dr. Reese replied that, "although he was very desirous to have done so, he was unfortunately unable to procure any frogs of the proper kind in the winter season, when his analysis was made. This was the only link wanting to complete the chain of evidence."

Dr. Thomas remarked that from his own experiments with strychnia and morphia combined, on frogs, the latter alkaloid appeared to have no effect in antagonizing the influence of the former, so as to counteract its poisonous impression. This corroborated the results of Dr. Reese's experiments on both frogs and cats.

1862. *Feb.* 5. *Report on Meteorology and Epidemics for* 1861.—Dr. WILSON JEWELL read the following report:—

METEOROLOGY.—As in former years, I have the pleasure of presenting an abstract of meteorological observations for the year 1861, made by my friend James A. Kirkpatrick, A. M., Prof. of Civil Engineering in the Philadelphia High School. These observations are taken for the Smithsonian Institution at Washington, and are authoritative. He has also at my request furnished a comparison of some of the meteorological phenomena of the year 1861 with those of 1860, and of the ten years from 1852 to 1861 inclusive, for Philadelphia, which I subjoin in his own words.

The mean temperature of the year (1861) was about six-tenths of a degree above that of the year 1860, and about four-tenths of a degree above the average for the last ten years.

The maximum temperature (95°) occurred on the 8th day of July. The minimum temperature, one degree below zero, was on the 8th of February. The range of temperature for the year was consequently 96°.

The warmest day of the year was the 8th of July, of which the mean temperature was 87.8°. The coldest day was the 13th of January, the mean for that day being 7.8°.

Of the seasons, this winter was one degree warmer, and the summer one degree and a quarter colder than the average for ten years. The spring was one-tenth of a degree colder, and the autumn six-tenths of a degree warmer than the average.

The temperature of all the months except three, fell within two degrees, of their average temperature for ten years. The month of October was three degrees above the average, and was the warmest October during the ten years of observation. February was 5½° above the average, and was the warmest February, for ten years, except February 1857, which was half a degree warmer.

The temperature of May was 3½° below the average, and was the coldest May for ten years, except May, 1858, which was seven-hundredths of a degree colder.

The maximum pressure of the atmosphere (30.526 inches), occurred on the 23d of January; and the minimum pressure (29.096), on the 27th of May.

The force of vapor and relative humidity for the whole year were greater than for 1860, but less than the average for ten years.

The amount of rain that fell during the year was an inch and a half more than the average amount for ten years. The quantity that fell in the month of December (2.016) was less than in any December since 1851; and the number of rainy days was fewer than ever before observed for that month.

General Abstract of Meteorological Observations, made at Philadelphia, Pa., during the year 1861.
By JAMES A. KIRKPATRICK, A. M., Prof. of Civil Engineering in the Philadelphia High School.
(Barometer fifty feet above ordinary high water in the Delaware River.)

1861.	THERMOMETER.									BAROMETER REDUCED TO 32° F. But not corrected for altitude.							
							RANGE.									RANGE.	
MONTHS.	7 A. M.	2 P. M.	9 P. M.	Mean.	Max.	Min.	Monthly.	Mean daily.	Mean of daily oscillations.	7 A. M.	2 P. M.	9 P. M.	Mean.	Max.	Min.	Monthly.	Mean daily.
	°	°	°	°	°	°	°	°	°	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.
January . . .	27.67	34.34	30.90	30.97	49½	1	48½	5.98	11.61	29.991	29.953	29.968	29.971	30.526	29.460	1.066	.229
February . . .	33.86	45.55	39.14	39.52	68½	—1	69½	8.90	17 27	29.954	29.912	29.951	29.939	30.485	29.308	1.177	.264
March	37.73	48.71	41.58	42.67	78½	16	62½	8.66	18.18	29.917	29.862	29.906	29.895	30.386	29.354	1.032	.231
April	47.18	60.55	51.10	52.94	88	33	55	5.85	19.05	29.845	29.787	29.816	29.816	30.233	29.213	1.020	.143
May	55.40	65.74	57.00	59.38	83	36	47	5.06	19.55	29.744	29.691	29.726	29.720	30.132	29.096	1.036	.156
June	69.30	79.27	70.63	73.13	91	51	40	5.29	18.55	29.783	29.742	29.739	29.754	30.062	29.528	.534	.104
July	72.74	82.87	72.69	76.10	95	55	40	3.70	19.29	29.800	29.765	29.780	29.781	29.961	29.505	.456	.078
August	68.88	79.52	71.05	73.15	94	54½	39½	3.94	16.84	29.912	29.896	29.910	29.906	30.212	29.608	.604	.098
September . . .	62.37	74.75	66.72	67.95	86	46	40	4.41	17.22	29.953	29.913	29.924	29.930	30.343	29.283	1.060	.144
October	54.32	66 61	58.69	59.87	88	34	54	5.28	16.94	29.945	29.893	29.926	29 921	30.452	29.469	.983	.166
November . . .	39.85	48.73	43.25	43.94	63½	29	34½	4.11	13.08	29.793	29.736	29.785	29.771	30.109	29.213	.896	.179
December . . .	32.52	42.26	35.88	36.88	64	19	45	5.66	14.58	30.040	29.992	30.012	30.015	30.462	29.292	1 170	.213
Annual means .	50.15	60.74	53.24	54.71	95	—1	96	5.57	16.85	29.890	29.845	29.870	29.868	30.526	29.096	1.430	.167
Winter	30.28	38.51	33.95	34.25	68½	—1	69½	6.63	13.69	29.961	29.925	29.959	29.949	30.526	29.285	1.241	.230
Spring	46.77	58.33	49.89	51 66	88	16	72	6.52	18.93	29.835	29.780	29.816	29.810	30.386	29.096	1.290	.177
Summer	70.31	80.55	71.52	74.13	95	51	44	4.31	18.23	29.832	29.801	29.810	29.814	30.212	29.505	.707	.093
Autumn	52.18	63.36	56.22	57.25	88	29	59	4.60	15.75	29.897	29.847	29.878	29.874	30.452	29.213	1.239	.163
For ten years . .	49.74	60.05	53.20	54.33	100½	—5½	106	5.61	15.19	29.892	29.853	29.877	29.874	30.704	28.884	1.820	.155

Meteorological Observations—Continued.

1861.	Relative Humidity.					Force of Vapour.							No. of days on which rain or snow fell.	Clouds. Tenths of sky covered.				Winds.	Dew-point.				
Months.	7 A. M.	2 P. M.	9 P. M.	Max.	Min.	7 A. M.	2 P. M.	9 P. M.	Mean.	Max.	Min.	Rain and melted snow.		7 A. M.	2 P. M.	9 P. M.	Mean.	Monthly resultant; No. of times in 1000.	7 A.M.	2 P.M.	9 P.M.	Mean.	Max.	Min.
	p. c.	p. c.	p. c.	p. c.	p. c.	inch.	inch.	inch.	inch.	inch.	inch.	inch.							°	°	°	°	°	°
January . .	80	72	81	100	40	.128	.144	.145	.139	.244	.034	4.620	13	6.9	6.5	4.7	6.0	N. 52° 12′ W., 375	22.43	25.73	29.59	24.58	39.6	—5.5
February . .	75	52	70	100	25	.158	.169	.186	.171	.375	.023	2.124	9	5.4	6.6	5.5	5.8	S. 77° 6′ W., 354	26.56	27.89	29.67	28.04	51.1	—13.8
March . . .	69	48	66	95	21	.175	.182	.185	.181	.479	.051	3.903	9	6.1	6.1	4.8	5.7	N. 73° 37′ W., 328	28.41	28.65	30.58	29.21	57.8	3.4
April. . . .	67	42	65	95	22	.231	.226	.259	.238	.520	.109	4.150	9	5.0	6.1	4.7	5.3	N. 73° 20′ W., 177	36.44	35.68	39.45	37.19	60.1	20.3
May	63	45	63	100	18	.282	.284	.297	.288	.594	.069	6.240	13	4.2	5.5	3.9	4.5	N. 72° 48′ W., 257	42.15	41.78	43.47	42.47	63.9	10.3
June	66	52	70	94	19	.475	.512	.530	.505	.813	.142	4.485	15	6.1	6.1	3.9	5.4	S. 81° 52′ W., 176	56.69	58.75	60.04	58.49	73.1	26.3
July	71	48	72	97	32	.578	.540	.579	.567	.819	.284	2.826	14	5.2	6.1	5.9	5.7	S. 58° 43′ W., 368	62.56	60.36	62.62	61.85	73.3	43.6
August . . .	83	60	79	92	34	.602	.608	.612	.607	.841	.296	2.864	12	7.0	6.4	5.0	6.1	S. 85° 55′ E., 088	63.60	63.77	64.20	63.86	74.1	44.6
September . .	83	60	79	97	42	.476	.516	.532	.508	.770	.279	4.976	6	6.4	6.1	3.8	5.4	S. 75° 28′ W., 161	56.94	59.15	59.90	58.66	71.4	43.2
October . . .	81	60	76	97	33	.373	.415	.410	.399	.731	.122	3.597	10	7.0	6.1	4.8	6.0	N. 75° 10′ W., 211	48.65	51.43	51.07	50.38	69.9	22.7
November . .	78	58	71	96	32	.199	.210	.206	.205	.523	.099	4.613	11	5.2	6.7	5.2	5.7	N. 68° 12′ W., 324	33.48	33.90	34.04	33.81	60.3	18.1
December . .	80	62	78	95	23	.155	.175	.173	.168	.390	.069	2.016	4	6.0	5.6	3.3	5.0	N. 74° 3′ W., 383	26.90	29.49	29.80	28.73	52.1	10.4
Annual means	75	55	72	100	18	.319	.332	.343	.331	.841	.023	46.414	125	5.9	6.2	4.6	5.5	N. 81° 41′ W., 239	42.07	43.05	44.20	43.11	74.1	—13.8
Winter . . .	78	63	74	100	25	.139	.151	.155	.148	.375	.023	10.045	30	6.2	6.7	5.0	6.0	N. 65° 37′ W., 354	24.22	26.20	26.42	25.61	51.1	—13.8
Spring . . .	66	45	65	100	18	.229	.231	.247	.236	.594	.051	14.293	31	5.1	5.9	4.4	5.1	N. 73° 18′ W., 254	35.67	35.37	37.83	36.29	63.9	3.4
Summer. . .	74	53	74	97	19	.552	.553	.574	.560	.841	.142	10.175	41	6.1	6.2	4.9	5.7	S. 61° 23′ W., 156	60.95	60.96	62.29	61.40	74.1	26.3
Autumn . .	81	59	75	97	32	.349	.380	.383	.371	.770	.099	13.186	27	6.2	6.3	4.6	5.7	N. 76° 25′ W., 204	46.36	48.16	48.34	47.62	71.4	18.1
For ten years .	76	58	72	100	13	.326	.343	.347	.339	1.059	.013	44.864	126	5.9	6.0	4.4	5.4	N. 75° 37′ W., 217		43.67			79.7	—16.5

A Comparison of some of the Meteorological Phenomena of the year 1861 *with those of* 1860, *and of the ten years from* 1852 *to* 1861 *inclusive, at Philadelphia, Pa.*

Lat. 39° 57½′ N. Long. 75° 10½′ W. from Greenwich. Height of barometer, 50 feet.

	1861.	1860.	10 YEARS.
THERMOMETER.			
Highest	95° on July 8	95.5° on July 20	100.5° on July 21, 1854
Mean of warmest day	87.8 " " 8	87.7 " " 20	91.3 " " 21, 1854
Lowest	—1.0 " Feb. 8	1.0 " Feb. 2	—5.5 " Jan. 23, 1857
Mean of coldest day	+7.8 " Jan. 13	9.2 " " 2	—1.0 " " 9, 1856
Mean daily oscillat'n	16.85	17.12	15.19
" range .	5.57	5.65	5.61
Means at 7 A. M. .	50.15	49.39	49.74
" 2 P. M. .	60.74	60.35	60.05
" 9 P. M. .	53.24	52.61	53.20
" for the year	54.71	54.12	54.33
BAROMETER.			
Highest	30.526 ins. Jan. 23	30.418 ins. Dec. 14	30.704 ins. Jan. 28, 1853
Lowest	29.096 May 27	29.099 Feb. 18	98.884 Apr. 21, 1852
Mean daily range .	.167	.143	.155
Means at 7 A. M. .	29.890	29.882	29.892
" 2 P. M. .	29.845	29.833	29.853
" 9 P. M. .	29.870	29.862	29.877
" for the year	29.868	29.859	29.874
FORCE OF VAPOUR.			
Means at 7 A. M. .	.319 inch	.311 inch	.326 inch.
" 2 P. M. .	.332	.321	.343
" 9 P. M. .	.343	.329	.347
" for the year	.331	.320	.339
RELATIVE HUMIDITY.			
Means at 7 A. M. .	74.8 per cent.	74.7 per cent.	76.2 per cent.
" 2 P. M. .	54.9	54.0	57.6
" 9 P. M. .	72.5	70.7	72.5
" for the year	67.4	66.5	68.8
Rain and melted snow, amount .	46.414 inches	45.400 inches	44.864 inches
No. of days on which rain or snow fell	125 days	131 days	126 days
Prevailing winds .	N. 81° 41′ W. .239	N. 79° 43′ W. .219	N. 75° 37′ W. .217

BIRTHS, MARRIAGES, AND DEATHS.—The present report comprises the tabulated returns of the births, marriages, and deaths for Philadelphia during 1861, and the first, for an entire year, under the registration law of July, 1860.

This law having been in operation only eighteen months, no very important results can as yet be expected; still, enough has been accomplished to warrant the declaration, not only of its popularity, but of its permanent success as a statute second to none other in interest, where the great and vital questions of health, life, happiness, and prosperity of a community are involved.

It is not, however, to be disguised, that this benign law, like many other well-designed plans to promote the public welfare, has, to a limited extent,

met with opposition, while its terms by others have been acknowledged with a bad grace.

Among the clergy may be found those, who, by their delinquency in the observance of its provisions, show their utter disregard for a wholesome sanitary law, and their want of reflection as to the inestimable value of a system of vital statistics, which, in accordance with the opinion of those who have realized its benefits, "is looked upon as the greatest boon that an enlightened government could confer upon the people."[1]

Several clergymen absolutely declined to conform to the law, until threatened with prosecution, and others, again, evinced their indifference to its provisions by neglecting to furnish the items of information called for in the blank schedules sent them.

Nor is our own profession altogether exempt from the charge of opposition and unwillingness to comply with the provisions of the law.

It would be almost a work of supererogation to expatiate upon the importance of registration. When full and complete returns shall be secured, and the field of observation extended, then will its value be better appreciated.

The Hon. John R. Bartlett, Esq., Secretary of State for Rhode Island, in presenting his report to the legislature, makes the following appropriate remarks.

"The importance of a complete registration is now greater than ever. When the present war is over, and the widows and children of those who have laid down their lives in defence of their country apply for pensions and bounty lands, the registration returns must be resorted to for the evidence required by the government, of marriages and births. So in the distribution of property of deceased persons, these returns are of the utmost importance. Had our present admirable system of registration of births, marriages, and deaths, been in operation during the war of the revolution, and that of 1812, some hundreds of thousands of dollars would have been saved to the people of this State, and hundreds of families, which for years struggled in adversity, would have been made comfortable during their lives. Already these records have been resorted to, to prove marriages, where parties have been killed in the existing rebellion, whose families have applied for pensions."[2] With equal propriety these remarks will apply to our own registration law. Already have applications been made at the office, for transcripts from the registry to prove the marriage of deceased soldiers as well as to prove their death.

BIRTHS.—The number of births returned and registered for the year according to the above table has been seventeen thousand two hundred and seventy-one (17,271). This is the largest annual return ever made for Philadelphia, and is no doubt a closer approximation to accuracy than therto obtained.

The deaths for the year have been 14,468. The excess of births, therefore, over the deaths, has been 2803. This excess, amounting to 19 per cent., is considered to be the natural annual increase of the population.

The births averaged for each day throughout the year forty-seven and one-third ($47\frac{1}{3}$).

The male births were 9008, the female births 8263, an excess of male births equal to 9 per cent., or as 109.7 males to 100 females.

[1] Speech of Lord Elcho, House of Commons, 1854.
[2] Rhode Island Register Report, 1860. Submitted to legislature December, 1861.

TABLE I.—*Table of Births under the new Law of Registration, for the year ending December* 31, 1861, *with the Wards, Sexes, and Colour designated, together with the Percentage of Births to Total Births, and Ratio of Births to Population of each Ward.*

MONTHS.	BIRTHS.		BLACK.		STILLBORN.		Twins.	Triplets.	WARDS.										
	M.	F.	M.	F.	M.	F.			1	2	3	4	5	6	7	8	9	10	11
January	844	658	9	17	39	27	12	..	93	87	66	69	36	36	58	29	33	45	72
February	795	679	12	12	29	27	16	1	85	78	54	61	40	40	61	32	35	50	53
March	844	724	15	14	26	24	24	..	94	80	56	59	37	36	52	39	34	49	46
April	728	595	21	9	39	26	12	..	114	54	44	63	33	25	52	20	25	40	48
May	652	634	10	7	27	17	16	..	89	48	32	43	24	27	49	32	40	43	47
June	662	683	14	8	26	20	14	..	88	68	38	48	40	33	60	47	43	41	37
July	792	703	14	17	38	20	13	1	100	68	57	56	35	35	72	39	33	49	36
August	761	728	8	20	31	26	13	..	116	58	37	48	45	43	70	31	51	41	56
September	729	711	14	12	33	17	10	..	97	62	42	51	51	41	60	38	50	43	46
October	702	716	10	12	31	24	11	..	109	65	42	64	27	29	80	36	36	49	40
November	757	696	12	16	23	18	9	..	114	59	45	49	36	31	78	45	48	57	45
December	742	736	8	18	22	20	12	..	112	62	39	66	28	43	80	38	42	41	61
Total	9008	8263	147	162	364	266	162	2	1211	789	552	677	432	419	772	426	470	548	587
Population of each ward									30,886	29,123	19,929	23,461	24,792	14,882	31,267	27,770	17,196	21,849	16,681
Percentage of births to total births									6.43	4.56	3.13	3.91	2.50	2.43	4.46	2.40	2.72	3.10	3.39
Ratio of births to population									25.50	36.90	36.10	34 65	57.36	35.51	40.50	65.19	36.58	39.87	28.41

MONTHS.	WARDS.													Wards not given.	Total.
	12	13	14	15	16	17	18	19	20	21	22	23	24		
January	41	36	61	70	73	80	50	95	95	39	49	51	97	41	1,502
February	58	42	64	91	56	88	46	114	94	37	39	50	60	46	1,474
March	37	51	69	97	59	85	54	113	106	49	52	58	80	76	1,568
April	39	35	53	88	50	73	43	93	84	36	39	48	63	61	1,323
May	48	40	61	80	46	57	45	108	85	35	42	47	74	44	1,286
June	47	45	55	85	55	75	48	100	91	33	25	41	61	41	1,345
July	34	43	65	94	41	73	65	132	84	40	56	56	88	44	1,495
August	54	48	67	98	60	77	56	88	70	37	53	58	77	50	1,489
September	43	43	74	79	46	77	54	85	94	40	50	70	58	46	1,440
October	47	40	59	103	70	76	43	105	68	45	44	54	52	35	1,418
November	38	61	63	90	60	88	45	84	74	33	36	62	81	31	1,453
December	49	38	63	93	48	104	50	112	98	41	39	42	53	36	1,478
Total	535	522	754	1068	664	953	599	1229	1043	465	524	637	844	551	17,271
Population of each ward	16,681	20,045	24,258	32,091	20,067	23,264	20,441	38,828	29,963	17,159	17,173	23,985	23,738		
Percentage of births to total births	3.09	3.02	4.35	6.18	3.84	5.51	3.46	7.11	6.05	2.69	3.03	3.68	4.88		
Ratio of births to population	31.17	38.40	32.17	30.04	30.22	24.41	34.12	31.59	28 72	36.90	32.76	37.65	28.12		

The ratio of births to population, fixing the population at the census returns for 1860, which is 565,529 would be one in every 33 persons living.

This ratio is greater than that of Massachusetts or Rhode Island for 1859, and something less than Boston for the same year.

The births for each month arranged according to the different seasons of the year will give the following result :—

Months.	Births.	Months.	Births.	Months.	Births.	Months.	Births.
December . .	1478	March	1568	June	1345	September . .	1440
January . . .	1502	April	1323	July	1495	October . . .	1418
February . .	1474	May	1286	August . . .	1489	November . .	1453
	4454		4177		4329		4311

According to this arrangement the winter season gave the greatest number of births, while the three spring months gave the least, but were the most prolific in conceptions.

The greatest number of births occurred in March, the least in May.

The highest number of births returned for any one ward was 1229, from the 19th, which has the largest population, numbering 38,828. The next highest was from the 1st ward, returning 1211 out of a population of 30,886. The 15th ward with a population of 32,091 gave 1068 births.

The lowest number of births recorded for any one ward, was 419, from the 6th, having the smallest population, viz. 14,482.

The following table gives the proportion of births by percentage in each ward, to the whole number of births as compared with the proportion of deaths in each ward to the whole mortality.

WARDS.	Per cent. of births.	Per cent. of deaths.	WARDS.	Per cent. of births.	Per cent. of deaths.	WARDS.	Per cent. of births.	Per cent of deaths.
1	6.43	6.05	9	2.72	2.47	17	5.51	5.72
2	4.56	5.24	10	3.10	2.92	18	3.46	4.12
3	3.13	2.77	11	3.39	3.13	19	7.11	7.50
4	3.91	4.70	12	3.09	2.51	20	6.05	5.59
5	2.50	3.38	13	3.02	2.74	21	2.69	2.29
6	2.43	1.98	14	4.35	2.94	22	3.03	1.71
7	4.46	5.07	15	6.18	5.31	23	3.68	3.00
8	2.40	2.96	16	3.84	3.66	24	4.88	3.38

The proportions as given in this table of comparisons between the percentage of births and the percentage of deaths, present a very different variation in some instances to what should be expected. In the 8th ward, which I have in this report designated the healthiest, the percentage of deaths exceeds that of the births, while in the 17th ward, the most unhealthy, the percentage of births is nearly equal to that of the deaths. The like variation prevails in the 19th ward.

The 24th, 22d and 14th, present the greatest contrast between the births and deaths, in favour of the former.

In the remainder of the wards the percentages do not vary to any great extent. The preponderance, however, being on the side of the births. Births are said to indicate the material prosperity of a community, as known by its numerical growth ; according to the above table, there is an indication of diminution of material prosperity in eight of the wards.

It would be altogether conjectural, in the present incipient state of our returns, to assign any special reason for what might be looked upon as

contrary variations in the figures of some of the healthy wards, or to attempt an explanation for the limited births in these wards. It is satisfactory, however, to know that, in the aggregate, the increase of our population over the deaths by births has been 19 per cent.

The number of births of children of colour amounted to 309. The sexes were, 147 males, and 162 females, an excess of 10.30 per cent. of the latter; a higher rate than among the white births.

In the births returned, there were 551, in which the location or name of the wards was not given.

There were returned 162 cases of twins and two cases of triplets.

The still-births amounted to 630. The excess of males over females, which was 98, equal to 36.84 per cent., is as remarkable as it will be unaccountable.

MARRIAGES.—In Table II. will be found the marriages registered during the year, with the ages of the parties.

TABLE II.—*Ages of Parties Married in the City of Philadelphia and Registered for the year ending Dec.* 31, 1861.

		AGES OF WOMEN.								TOTAL OF THE MEN.	PERCENTAGE OF GROOMS.
		Under 20.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Age not given.		
AGES OF THE MEN.	Under 20	15	1	..	..	..	..	..	..	..	16	0.36
	20 to 25	659	826	98	19	..	..	..	..	8	1610	36.47
	25 to 30	208	680	349	79	5	1	..	..	11	1333	30.17
	30 to 40	60	258	261	178	29	1	..	..	2	789	17.86
	40 to 50	8	36	62	94	45	..	..	..	2	247	5.59
	50 to 60	1	6	6	28	30	4	1	..	..	76	1.74
	60 to 70	..	1	3	6	4	7	..	..	..	21	0.47
	70 to 80	..	..	..	..	2	..	2	..	..	4	.09
	Age not given	2	4	2	..	..	..	..	..	313	321	...
TOTAL OF WOMEN		953	1812	781	404	115	13	3	..	336	4417	...
PERCENTAGE OF BRIDES		21.34	41.04	17.67	9.14	2.60	0 29	.06	..	..	..	...

This table is arranged in order to show the number of marriages where the parties are of the same or different quinquennial periods of life.

The number of marriages solemnized for 1861 have been 4417.

Of these, 953 or 21.34 per cent. of the brides were under twenty years of age, and only 16 or .36 per cent. of the grooms were under age.

Of the brides between twenty and twenty-five, there were 1812 or 41.04 per cent., and of the grooms at the same period there were 1610 or 36.47 per cent.

Between twenty-five and thirty, there were 781 or 17.67 per cent. marriages of brides, and 1333 or 30.17 per cent. of grooms.

Between thirty and forty, there were marriages of 404 brides and 789 grooms.

There were four grooms between the ages of seventy and eighty, and three brides between sixty and seventy.

The most popular age for marriage in both sexes was between twenty and twenty-five. There were 41 per cent. of females and 36.47 per cent. of males.

Nearly two-thirds of all the females when married were under twenty-five years of age, and 80 in each hundred were under thirty.

The ages of 336 of the females and 321 of the males have been omitted in the returns.

This omission on the part of clergymen may be from carelessness (it can hardly be attributed to ignorance), but I am more disposed to charge it to indifference. If every clergyman would reflect upon the injustice that a neglect of a proper registration of marriages may entail upon the parties themselves, or, upon the rights of their posterity, they would be more careful to comply with the provisions of the law and more ready to make their returns.

In Table III. will be found a record of the nativity of the brides and grooms, whether American or foreign.

TABLE III.—*Number of Marriages in the City of Philadelphia Registered for the year ending Dec.* 31, 1861, *with Nativity of the Brides and Grooms.*

NATIVITIES.		BIRTHPLACE OF BRIDES.			TOTAL OF GROOMS.
		United States.	Foreign.	Not given.	
BIRTHPLACE OF GROOMS.	United States . . .	2200	256	17	2473
	Foreign	380	1326	17	1723
	Not given	28	10	183	221
TOTAL OF BRIDES		2608	1592	217	4417

Of the whole number of persons married 5081 were born in the United States, equal to 57.51 per cent. and 3315 were born in foreign countries, equal to 37.52 per cent. The birth places not named occurred in the case of 438 persons that entered into wedlock.

Of the brides 2608 or 59 per cent. were born in the United States, and 1592 or 36 per cent. were of foreign birth, of 217 the birth places were not given.

Of the grooms 2473 or 55 per cent. were American born, while 1723 or 39 per cent. were born abroad. The place of birth was not given for 221.

The record shows, that in 2200 or 49 per cent. of the marriages both parties were Americans, and in 1326 or 30 per cent. both parties were foreigners.

In 380 instances, equal to 8 per cent., American women married foreigners, and in only 256 instances, equal to 5 per cent., did American men marry women born abroad.

DEATHS.—The following is a general summary of the mortality for the year as found in Table 4, and is arranged to present the deaths of the white and coloured population; the males and females; the adults and minors; the sexes, together with the number of deaths from disease, still deaths, old age, unknown, and external, or accidental causes.

General Summary of Deaths for 1861.

White	13,754	
Coloured	714	
Total		14,468
Males	7,582	
Females	6,886	
Total		14,468
Male minors or children	4,800	
Female " "	4,217	
Total minors	9,017	
Male adults	2,782	
Female adults	2,669	
Total adults	5,451	
Total		14,468
Deaths from registered diseases	13,063	
Deaths from stillborn	630	
Deaths from old age	203	
Deaths from unknown external and accidental causes	572	
Annual total of deaths from all causes		14,468

Under an act of the legislature of March 8th, 1860, for the registration of births, marriages, and deaths, for the city of Philadelphia exclusively, and which was initiated according to its provisions, July 1st, of the same year (1860), the number of deaths registered for 1861 have amounted to fourteen thousand four hundred and sixty-eight (14,468).

This is the highest number of deaths ever returned for our city during a single year, and I have every reason to believe is a more accurate record of our mortality than has before been presented.

In my report for 1858, I referred to the incompleteness of our tables of mortality, arising from defective returns under the health law, as it then existed, and suggested that proper allowance should be made for this imperfection. At the same time I stated the impracticability of obtaining more accurate returns, until a better system of registration should be established through legislative enactment. This desirable improvement has now

been secured, and I trust that hereafter the returns made through the registration department of the Board of Health, will be full and reliable.

By a comparison with the death returns for 1860, viz., eleven thousand five hundred and sixty-eight (11,568), it will be seen that there has been an unusual augmentation during 1861. The increase for the year amounts to twenty-nine hundred (2900), and is equivalent to 25 per cent. over those of the former year.

This large increase of deaths in our city, very naturally suggests the inquiry, to what cause or causes is it to be attributed?

It is due, in the first place, to the operation of the registration law, which enables us to secure more correct returns. One evidence in proof of this opinion may be gathered from the fact, that since the initiation of the registration law, death returns have been received weekly at the health office, from upwards of forty places of interment, located principally in the more distant suburbs, from which no returns had hitherto been received.

Another reason is, that formerly the dead taken out of the city for burial were not included in our bills of mortality. Under the present law, undertakers are required to furnish a certificate of death for registration, and receive in return from the health office a certified transcript from the record of said death, which certificate accompanies the body as the voucher, for the cause of death.

In addition, there has existed another, and a far more unmistakable cause for the large addition of deaths during the year. This will be found in the remarkable and protracted prevalence of no less than three epidemics simultaneously, to wit, scarlet-fever, smallpox and diphtheria.

For the entire year, and to an extent hitherto unknown in this city, throughout every section, from the most healthy and most pleasant rural districts, through every transition of location down to the very extremes of filthy and wretched homes in the more crowded and unhealthy wards, were these diseases to be found committing their deadly ravages. In some neighbourhoods they extended from house to house, carrying off two and three children of a family. They appeared to be uninfluenced by the seasons of the year, or the extremes of temperature.

Presenting distinct features in their symptoms, and unlike in their pathological conditions, yet in their origin they were, no doubt, connected by a mysterious bond of union. This union springing from and dependent upon some unknown distempered influence, familiarly known as an epidemic influence, either meteorological or terrene, or both, forming poisons which, through the intervention of a secret power, develops their peculiar effects upon systems already predisposed to disease; imparting to the blood, in one, smallpox, in another scarlet-fever, and in a third diphtheria.

"It has been a subject of frequent observation," remarks Dr. Wood, "that a certain epidemic tendency after continuing for several years, will be followed by another of a different kind, which in its turn will give way to the former tendency, or to a third different from either."[1] In the present instance, however, the prevailing epidemic influence has, in some respects, observed a modified course from the peculiarity noticed above. Three destructive epidemic diseases have simultaneously pervaded the same neighbourhoods, and even the same families.

It becomes an interesting question for pathological investigation into the laws governing the inception and progress of epidemics, whether these

[1] Wood's Practice, vol. i. p. 163.

several diseases owe their origin to the influence of specific poisons, in conformity with the prevailing sentiment of authors, or whether, according to a theory originating, I believe, with the late Dr. E. S. Barton, as to the origin of certain zymotic diseases, they too have no dependence upon special poisons, but are the result of certain combinations varying in their several definite proportions, of the two conditions, aerial and terrene, which constitute the epidemic influence that has been in active existence for several consecutive years in our city.

Dr. Wood remarks on this point, "Whether the epidemic influence is alone sufficient to produce smallpox, scarlatina and other contagious eruptive affections, which sometimes become epidemic, without the co-operation of the specific contagion is perhaps questionable. It is highly probable that it may be so; as these diseases occasionally occur epidemically without any known communication between the individuals first attacked, and others previously affected." Again, he says, "Sometimes the epidemic influence predisposes to some one, especially of the exanthemata, as to smallpox on one occasion, measles on another, &c.; sometimes the tendency seems to be towards eruptive diseases in general."

This opinion is by no means at variance with the views of Dr. Barton, and concedes, in part, his theory.

It may prove of some degree of interest at the present time, when the aggregate mortality for the year has so far exceeded that of any former one to compare the death rate of one year with another for the past few years. For this purpose I have prepared the following statistical table of mortality; including the population, the deaths to population, and the deaths in each one thousand living, for eight consecutive years, commencing with eighteen hundred and fifty-four, when the city was consolidated, and embraced in its area the entire county.

To arrive at the aggregate population for each year, I have taken as a basis the 7th census return of the city and county, for 1850, which was set down as four hundred and eight thousand seven hundred and sixty-two (408,762). Computing the annual increase of our population to be $3\frac{1}{2}$ per cent., which is a fraction over the average, as furnished by the 8th census of 1860, but, in my estimation, rather below than above the actual standard, I have calculated the average increase on that apportionment for each successive year, including 1861.

Year.	Deaths.	Population.	Deaths to population.	Deaths to each 1000 living.
1854	11,815	469,059	1 in 39	25
1855	10,457	485,475	1 in 46	21
1856	12,334	502,466	1 in 40	24
1857	10,895	520,051	1 in 47	20
1858	10,697	538,252	1 in 50	20
1859	9,742	557,090	1 in 57	17
1860	11,568	576,587	1 in 49	20
1861	14,468	596,766	1 in 41	24
Aggregate	91,976	4,245,746	1 in 369	21
Average	11,497	530,718	1 in 46	21

This octuple calculation gives a mean of 11,497 deaths annually in an average population of 530,718.

It also makes the average of deaths to population during a period of eight years as 1 in every 46; while the average deaths for each thousand living, were twenty-one (21).

By exhibiting this table, I am able to demonstrate that while our returns of deaths for 1861, in point of numbers, certainly have been far above those of any former year, yet in proportion to population, they indicate rather a decline than an increase of mortality, when compared with two of the eight years, viz., 1854 and '56. The former giving 1 in 39, and the latter 1 in 40 of the population, whereas 1861 gave 1 in 41, although the aggregate number of death returns rates the highest.

The average deaths in each thousand living of the population, as furnished by this table is 21, and during these eight years the deaths ranged from 17 to 25. This, therefore, should be viewed as a fair average of our city mortality, provided the record is reliable.[1]

In the 20th report of the Registrar-General of England, seventeen in each thousand living has been assumed as the natural proportion of deaths, and "all deaths exceeding that number are to be considered as unnecessary." To some extent this standard may be viewed as correct, provided the calculation is made from salubrious districts, which do not embrace within their limits large cities or numerous towns, as were the 64 districts selected from various parts of England, from which the above calculation was made.

In Rhode Island, the average of deaths to each thousand living for the period of seven years, was but thirteen.

In 1860 the deaths in a thousand were fifteen. In Massachusetts, for 1859, they were seventeen. In Scotland the rate is nineteen, and in England twenty two in each thousand.

In cities it will be found that the proportion will always be higher than in country districts, and, from causes that are continually pressing upon the population, producing unnecessary disease and premature death. Take as an example the city of Providence, one of the best regulated and healthiest cities in this country, although not one of the largest class in point of population, and it will be seen that the annual average of deaths is 20 in each thousand living.

This I believe should be considered, under favourable circumstance, a reliable average for cities, and I am confident that if proper attention were given by our municipal corporation for the correction and removal of those existing evils which produce sickness, and swell our bills of mortality, the death rate would compare with that of Providence.

In Boston, where great care is observed in carrying out the registration law, the deaths to one thousand living, during a term of nine years, ranged from 21 to 26. Our own city, therefore, in the past eight years, presents somewhat a more favourable range than Boston, being from 17 to 25 according to our mortality returns, for which, however, some allowance may have to be made for their completeness.

MONTHLY MORTALITY.—The following table furnishes the deaths for each month throughout the year. It shows the mortality of males and females, adults and children or minors (that is all under twenty), in separate columns.

[1] If the calculation be made according to the last census returns, it makes our death rate still more unfavourable, giving us 1 death in every 39 of the population.

Return of Deaths in each Month, showing the number of Deceased Males and Females, Adults and Children, for the year 1861.

1861. Months.	Males.	Females.	Adults.	Children.	Total.
January	664	652	513	803	1,316
February	589	534	460	663	1,123
March	596	549	455	690	1,145
April	757	652	555	854	1,409
May	564	552	424	692	1,116
June	546	508	384	670	1,054
July	1,012	846	495	1,363	1,858
August	742	665	424	983	1,407
September . . .	510	474	383	601	984
October	589	529	464	654	1,118
November . . .	488	419	435	472	907
December . . .	525	506	459	572	1,031
	7,582	6,886	5,451	9,017	14,468
	14,468		14,468		

July gave the highest number of deaths, 1858, or a fraction less than 13 per cent. of the entire mortality. The three summer months, June, July, and August, contributed 4,319 of the deaths, equal to nearly 30 per cent. of the annual mortality.

With two exceptions, the deaths in every month exceeded one thousand. September gave 984, while November, the lowest, gave 907.

The highest number of deaths of minors was in July, 1363. August furnished 983, and June 670. These three months contributed 33.44 per cent. of all the mortality among minors.

The excess of deaths of males over females is shown to be 696. That of children over adults, 3566.

ANNUAL MORTALITY.—Of the deaths reported for the entire year (see Table 4), seven thousand five hundred and eighty-two (7582) were males, and six thousand eight hundred and eighty-six (6886) were females: this gives, as usual, the excess to the number of males, equal in this instance to 10 per cent.

Of the deaths under twenty years of age, classed as minors, there were nine thousand and seventeen (9017); those beyond twenty, or, adults, amounted to five thousand four hundred and eighty-one (5481); showing an excess of deaths in children equal to 64.51 per cent. over those in adults.[1]

The mortality in children under five years of age was seven thousand four hundred and six (7406), and when compared with the entire mortality for the year, is equivalent to fifty-one (51) per cent., while the number under ten years was eight thousand four hundred and twenty-four (8424), or 61 per cent. of the whole mortality.

This is an appalling item in the record for 1861, viz., that children under ten years of age should contribute 61 per cent., more than one-half the

[1] The still-born children, amounting to six hundred and thirty, are included in the above deaths.

amount of deaths! This excessive mortality, I apprehend, is not sufficiently appreciated by our profession, or adequately understood by our municipal authorities.

This destruction of life in helpless infancy has attained such gigantic proportions as to demand from the profession of medicine a careful and thorough investigation into the causes which are productive of such an unnecessary amount of disease and death in children of tender years; and from the civil authorities, energetic and systematic efforts in the adoption of adequate measures for the removal of the various sanitary evils detrimental to health, by the enforcement of a stringent sanitary police reform. That something more is required than is now being accomplished either by our Board of Health or corporate authorities for the prevention of disease in our city is too evident to require a single argument. The statistical fact I have presented of the fearful mortality among children is enough. Volumes of reasoning could not be more convincing.

If the inquiry is made, what is to be done? I answer, everything. The first decided movement is yet to be taken, in the direct line of sanitary reform, by our Councils. When have they ever ordered an inquiry either by a committee or commission, into the sanitary condition of our city? The City Surveyor, the Chief Engineer of the Water Department, the Commissioner of Highways, and the Board of Health, through their valuable and highly interesting annual reports to the Mayor and Councils, have adverted in emphatic language to numerous sanitary defects—while the Mayor, in a spirit befitting his office, with a prompt and cheerful devotion to all the interests of the city, has been careful to direct their attention to those recommendations which appertain to the improvement of the health of the city. How far these vital interests have received that attention which their importance deserves—let the proceedings of Councils answer.

It is deeply to be regretted that the sanitary police of cities is not or will not be understood by corporations. Nor is it less to be regretted, that the occurrence of a high rate of infant mortality, year after year, one of the direct results of sanitary neglect, should have received no attention whatever from our city corporation.

No expense should be regarded as useless or extravagant, that contemplates the preservation of the health of a community. It is no wise economy to overlook the requirements of public hygiène. The neglect of it is sure to entail a burden upon the corporation. It introduces disease, and ends in death. It retards industry, encourages idleness, induces poverty, and invites both social and moral degradation.

On the other hand, the inculcation and enforcement of a system, that will investigate sanitary evils, and correct the abuse of the laws of health and life, will not only protect the health of a community, but enhance their intelligence, increase their wealth, and add to their happiness, in a social, moral, and physical relation.

If it be regarded as expedient for the security of the peace and good order of society, to establish a well regulated and competent police force; of how much more real value is it to the interests of a community to secure and enforce systematic health police regulations, in order to guard, as far possible, the health of citizens, and to search out and cause to be arrested and removed, all nuisances of a public or private nature, that are prejudicial to health. It is high time that the distinguished philanthropy of our city, had turned its active benevolence into the long neglected channel of public hygiène.

Wise and judicious municipal laws are being enacted to promote our commerce, to protect our property, to maintain our rights, to regulate business, to preserve order, to detect dishonesty, and to secure amusement for the pleasure seeker—but how seldom has city legislation been drawn to the enactment of ordinances for the promotion and better preservation of the health of the people—a field of inquiry which underlies every other interest. To take care of the health is not only a moral obligation but a sacred duty which every corporation owes its citizens.

MORTALITY IN WARDS.—A very interesting and instructive comparison will be found in the following table of the deaths in each ward, with those of one ward with another; going to show the unhealthiness of some sections of our city with the healthiness of other sections.

Mortality in each Ward, with the Population (according to the late Census), the ratio of Deaths to Population, the Percentage of Deaths in each Ward to the Total Mortality, and Deaths in each thousand of the Population. Also the Deaths from unknown Wards, from the Almshouse and from the Country.

WARDS.	Population last census.	Deaths.	Deaths to population.	Per cent. of deaths to total mortality.	Deaths in each thousand of population.
First	30,886	875	1 in 35	6.05	28.22
Second . . .	29,123	758	1 " 38	5.24	26.13
Third	19,929	400	1 " 49	2.77	20.00
Fourth . . .	23,461	681	1 " 34	4.70	29.17
Fifth	24,792	488	1 " 50	3.38	17.91
Sixth	14,882	286	1 " 52	1.98	19.06
Seventh . . .	31,267	733	1 " 42	5.07	23.60
Eighth . . .	27,770	427	1 " 65	2.96	15.81
Ninth	17,196	356	1 " 48	2.47	20.94
Tenth	21,849	422	1 " 51	2.92	19.18
Eleventh . . .	16,681	452	1 " 36	3.13	26.58
Twelfth . . .	16,681	362	1 " 46	2.51	21.29
Thirteenth . .	20,045	397	1 " 50	2.74	19.85
Fourteenth . .	24,258	426	1 " 56	2.94	17.75
Fifteenth . . .	32,091	768	1 " 41	5.31	24.00
Sixteenth . . .	20,067	529	1 " 37	3.66	26.45
Seventeenth . .	23,264	828	1 " 28	5.72	36.00
Eighteenth . .	20,441	596	1 " 34	4.12	29.80
Nineteenth . .	38,828	1,085	1 " 36	7.50	27.82
Twentieth . .	29,963	809	1 " 37	5.59	26.96
Twenty-first . .	17,159	332	1 " 51	2.29	19.53
Twenty-second .	17,173	248	1 " 69	1.71	14.58
Twenty-third .	23,985	434	1 " 55	3.00	18.08
Twenty-fourth .	23,738	489	1 " 48	3.38	20.37
Unknown . . .	.....	446	.....	.....	.....
Almshouse . .	.....	543	.....	.....	.....
From the country	.....	298	.....	.....	.....
Total for 12 mos.	.....	14,468			
Total population	565,529				
Ratio of deaths to population		.....	1 in 39		

We have here the population of the several wards as given by the census for 1860; the number of deaths, the deaths to population, and the deaths

in each thousand of the population of the ward, together with the percentage of deaths in each ward to the total population for the year.

The highest mortality registered against any single ward was 1085. This was the 19th, with a population exceeding that of any other ward, amounting to thirty-eight thousand eight hundred and twenty-eight (38,828). This is not, however, the most unhealthy ward, rating the fifth in the line of descent from the most unhealthy, the deaths being 27.82 in each thousand of its population. The most unhealthy ward was undoubtedly the seventeenth (17th). This ward contains a population of twenty-three thousand two hundred and sixty-four (23,264), supplying eight hundred and twenty-eight (828) deaths, which is equal to 36 in every thousand of its population.

The eighteenth, the fourth, and the first, in the order I have placed them with the 17th and 19th, all of them crowded and defective in sanitary improvements, are by far the unhealthiest group in the twenty-four wards of the city. They have contributed 28 per cent. of all the deaths for the year.

The seventeenth is a densely crowded ward, located in a section of the city known formerly as West Kensington. Its population is made up chiefly of the working classes. Many of these people are poor, live in rooms badly ventilated and badly located in narrow alleys and contracted courts, with barely breathing space for room; while many of the tenements are miserably constructed for a proper supply of air and light, and are mostly over-crowded. The streets and other thoroughfares in this ward are generally damp and filthy with foul gutters, and a large portion of the inhabitants are by no means remarkable for habits of cleanliness.

By reference to the table of mortality for the year, it will be found that three hundred and thirty-seven (337) of the deaths in this ward, equal to 40.70 per cent. were from zymotic or epidemic, in other words, preventable or unnecessary diseases. Classed among these deaths were ninety-nine (99) from scarlet fever; ninety-seven (97) from smallpox; forty-four (44) from diphtheria; forty (40) from cholera infantum; thirty-three (33) from marasmus; forty-seven (47) from convulsions, and fifty-one (51) from debility.

The lowest number of deaths registered for any one ward was two hundred and forty-eight (248), in the 22d containing a population of seventeen thousand one hundred and seventy-three (17,173). It is an open country or rural district, a large territory, with a sparse population, and this population one among the smallest, making the fifth in the upward scale in numbers, and rates the healthiest from every stand point in which it may be viewed. In the table, it contributes only 1 death in every 69 of its population; 1.71 per cent. only of the entire mortality, and not more than 14.58 in every thousand of its own population. This ward embraces within its boundaries the beautiful and attractive suburban village of Germantown, with its elegant mansions and cottage residences, its handsomely embellished gardens, its rich meadows, its shaded parks and spacious pleasure grounds. Thus rendering it, connected as it is by easy and rapid railroad conveyance to the business marts of the city, a favourite and healthy rural residence.

The ward containing the smallest population is the sixth, which numbers only fourteen thousand eight hundred and eighty-two (14,882), is located in the old city proper, and has a Delaware front extending from Chestnut up to Vine Street. It returned two hundred and eighty-six (286) deaths,

equal to nineteen (19) in every thousand of its population. This ward in former years was densely populated and contributed its full share of deaths. The intrusion of places of business has driven many families beyond its boundaries, which accounts for its limited population and deaths; at the same time it will be observed that the proportion of deaths to population is not as favourable as some other wards centrally located. The fifth, an adjoining ward, having as deep a front on the Delaware, and containing a population of twenty-four thousand seven hundred and ninety-two (24,792), gave but 488 deaths, which is 17.91 in each thousand of its population.

The eighth ward, extending from Spruce to Chestnut Street, and from Seventh Street to the Schuylkill River, with a population of twenty-seven thousand seven hundred and seventy (27,770), supplied only four hundred and twenty-seven (427) deaths, or (15.81) for every thousand of its population. Out of all the city or built up wards, considering its location, the eighth appears to be the most favourable for health. It contributed no more than six deaths from smallpox; thirteen from scarlet fever; five from diphtheria; nine from typhoid fever; and twenty-one from cholera infantum. The sanitary condition of this ward, superior I believe to any other, is to be accounted for by its ample domiciliary conveniences, the absence of small alleys and confined courts containing crowded and filthy residents, together with the observance of care to prevent the accumulation of kitchen and other offal in the yards, gutters, and streets.

The fourteenth ward, bounded by Vine and Poplar, Tenth and Broad Streets, may also be placed with those wards which enjoy a good share of health and return only a limited number of deaths.

Enough probably has already been gathered from the statistics of this table, in order to illustrate the comparative difference in mortality between those wards enjoying the benefits arising from a more or less improved sanitary condition, and others less favoured, or, which are wanting in many of those important arrangements which exercise almost a controlling influence over the health of a neighbourhood.

A proper attention to the hygiene of our city by the civil authorities, would in my judgment not only lessen many of the moral evils prevalent in the community, but would reduce the weekly bills of mortality 25 per cent. or even more, and save hundreds of lives annually, that are now lost through the fatal influence of preventable diseases.

Table V., Class 1. ZYMOTIC DISEASES.—Those which have an epidemic, endemic or contagious character and originating from specific or local causes which are removable. Hence, the diseases named here are in a great measure preventable, are unnecessary, and are a manifest source of premature death in our community, especially with the infant population.

This class I consider to be the most important of all the classes, as affording an index to the salubrity or unhealthiness of the year. It will be the touchstone in every city of the excellency or neglect of sanitary regulations. The deaths in 1861 under this head have amounted to four thousand and sixty-four (4,064). Comparing this number with those of the same class for 1860, which were twenty-two hundred and seventy-five (2275), I find an increase of seventeen hundred and eighty-nine (1789), equivalent to 78.59 per cent.

This extraordinary increase may be covered by the prevailing epidemics, scarlet fever, smallpox, and diphtheria from which there have been recorded twenty-four hundred and fifty (2450) deaths, which are equal to 60.30 per cent. of all the deaths from zymotic diseases.

This mortality holds a relation to the total of deaths for the year of twenty-eight per cent., or, as one in every three and a half.

It is from diseases belonging to this class that the life of infants is rendered so precarious, and to which we may legitimately ascribe a large majority of the deaths among children in our city.

If I adopt the views entertained by an eminent statistician and sanitarian of New York, that convulsions, dropsy of the head, marasmus, pneumonia, phthisis, inflammation of stomach and bowels, scrofula and still-births, are due to internal domiciliary circumstances "which we can absolutely prevent," I could swell the number of deaths from diseases of the order over which we have "entire control" and should not exist, twofold. I am not, however, so thoroughly convinced as to the correctness of the opinion that the diseases above enumerated, do depend exclusively upon causes that can be eradicated. That several of them may occasionally be produced, and others, perhaps all of them be greatly aggravated through the influence of internal domiciliary circumstances, and the entire neglect of public sanitary improvement I am ready to concede, but I take issue to the assertion that pneumonia, phthisis, convulsions, dropsy of the head, inflammation of the stomach and bowels, and still-births may be exterminated by the enforcement of sanitary laws and ordinances.

Without the addition of these diseases, many of which are peculiar to infancy, the record reveals the startling fact that three thousand four hundred and seventy-four (3474) or 85.45 pr. ct. of the deaths from zymotic diseases were selected from that interesting and tender class of the community—the infants and children of our family circles. Of this number, three thousand three hundred and five (3305) had not reached their tenth year.

To make this class more satisfactory to the reader and to show the periods of the year when the diseases belonging to it are most prevalent, I have divided it into four quarterly tables.

By this analysis it will be seen that the third quarter, or the three months July, August, and September, have furnished the highest mortality, amounting to 1533, and that the fourth quarter, October, November, and December, gave the least, 663.

The heaviest mortality at any age was between two and five years, amounting to eleven hundred and seventy-nine (1179). That under one year reached nine hundred and twenty-two (922).

The facilities afforded by the registration law, enables me to introduce the names of those several wards or localities that have suffered most severely from this class of diseases. Nor will it be considered strange that those sections which contain numerous small, contracted, badly ventilated tenements—numerous blind courts and narrow alleys—streets imperfect in paving and drainage, oftentimes reeking with mud and other filth—sections fruitful in every variety of pestilential causes and a large part of the population of which are by no means remarkable for habits of cleanliness, and are overcrowded in their dwellings—furnish the infant victims which so largely swell our bills of mortality.

The following tables will furnish at a glance the population, the mortality from zymotic diseases, and the mortality from all diseases in each of the twenty-four wards as well as a comparison of one ward with another. The first table presenting those wards which appear to be unhealthy or where the deaths have been most numerous; the second table giving those which may be considered healthy where there have been but few deaths.

TABLE A.—*Wards in which Zymotic or Epidemic Diseases were prevalent and deaths over* 150.

WARDS.	Population.	Total deaths.	Deaths from zymotics.
1	30,886	875	247
2	29,123	758	237
4	23,461	681	171
7	31,264	733	184
11	16,681	452	151
15	32,091	768	203
16	20,067	529	183
17	23,264	828	337
18	20,441	596	233
19	38,828	1085	347
20	29,963	809	270
	296,072	8114	2563

TABLE B.—*Wards in which Zymotic or Epidemic Diseases have not prevailed extensively, and where the deaths were under* 150.

WARDS.	Population.	Total deaths.	Deaths from zymotics.
3	19,929	400	99
5	24,792	489	120
6	14,882	286	58
8	27,770	427	71
9	17,196	356	66
10	21,849	422	101
12	16,681	362	125
13	20,045	397	109
14	24,258	426	110
21	17,159	332	108
22	17,173	248	58
23	23,985	434	114
24	23,738	489	114[1]
	269,457	5067	1253

The first table A embraces eleven wards, the first, second, fourth, seventh, eleventh, fifteenth, sixteenth, seventeenth, eighteenth, nineteenth, and twentieth. In these wards, with an aggregate population of two hundred and ninety-six thousand and seventy-two (296,072) there occurred eight thousand one hundred and fourteen (8114) deaths, of which number twenty-five hundred and sixty-three (2563), or 31.58 per cent. were from zymotic or epidemic diseases.

The second table B contains the remaining thirteen wards, in which it will be seen that the death rate is much more favourable than that in the first table, particularly as regards zymotic diseases.

The population of these wards amounts to two hundred and sixty-nine thousand four hundred and fifty-seven (269,457) less than in the eleven wards of the first table, by twenty-six thousand six hundred and fifteen (26,615) or 9 per cent. while the entire mortality was only five thousand and sixty-seven (5067) less three thousand and forty-seven (3047) or 30 per cent. than in the eleven wards above enumerated, while the deaths from zymotic diseases were only twelve hundred and fifty-three (1253) or 51.10 per cent. less than those in the former eleven wards.

This shows conclusively that during the year 1861 the eleven wards of the first table have contributed the largest number of deaths from zymotic diseases, and therefore have been the *most unhealthy.*

These tables further illustrate the comparative health of the several sections of the city. Let it be remembered also that the increased mortality which I am now discussing is the unnecessary mortality alluded to by the Registrar General of England, the product of preventable diseases, the result of causes almost if not entirely within our control or removable by human agencies.

A visit for sanitary inspection through some of the eleven wards where the excess of deaths has occurred would furnish abundant evidence of their

[1] The record gives this ward 178, but 64 of these were from almshouse, making those in the ward only 114.

relation to contagious and infectious fevers and other diseases of an epidemic and pestilential character.

Where we find imperfect sewerage and drainage, with filthy streets and gutters; domicils crowded, faulty in construction, unventilated, low; damp cellars, and basement residences swarming with an over-crowded population deficient in morality and cleanliness, living in the midst of atmospheric impurities, with a limited supply of sun light, subsisting upon food of an inferior quality and many of them large consumers of unwholesome liquors, what less can be expected under such unfavourable circumstances, where the laws of health are daily violated and where the atmosphere is poisoned, than a large amount of zymotic disease and a heavy bill of mortality.

Unfortunately the innocent are made to suffer for the guilty. These fruitful sources of disease too frequently confine their influence to helpless infants and children, who are thus made the innocent victims of the faults and follies, or, the vices of indifferent and degraded parents. It is in such poisoned vicinities that death invariably reaps an abundant harvest.

I would not, however, be thought to convey the impression that the infant mortality of our city is confined wholly to the indigent, thriftless, degraded, and vicious families located in our crowded and more unhealthy wards. While this class of our population from circumstances incident to their manner of living furnish a heavy proportion of infant mortality, it is a sad reflection that there are errors committed in high places in regard to diet, clothing and exercise; that amongst the better provided for in the community, even where wealth abounds and where there is neither want of education nor intelligence or other favourable surroundings, the ratio of infantile mortality is far higher than it should be. Indiscretion in nursing, in feeding, in dressing, and in airing infants and children, too often prepare the way for the inception of disease and its fatal termination.

It is well known to those who have been familiar with the prevailing diseases for the past several years that we have been passing through a scarlet fever cycle. Without any interval of exemption from this epidemic, or any mitigation of its malignant character, but on the other hand a marked increased fatality of it, diphtheria made its appearance in our midst about February, 1860, and, according to the opinion of some, assumed the livery or was modified by the then prevailing epidemic; according to others, it was a form of scarlet fever itself unaccompanied by the eruption.

Dissenting, however, from these views, I have only to say, that diphtheria invaded our city in a highly malignant form, exhibiting the most distinctive and violent constitutional symptoms. In a very few months following the outbreak of this fatal disease, and before it or scarlet fever had reached their culminating points of fatality, smallpox, in October, 1860, was superadded. The year 1861 opened with these three prevailing epidemics; nor has there been any material mitigation of either disease throughout the entire year. On the other hand, there has been observed an occasional increase of the mortality, scarlet fever maintaining the ascendency in the number of fatal cases.

The total of deaths assigned to these three diseases, for the year, has amounted to 2450, as follows: Scarlet fever, 1190; smallpox, 758; and diphtheria, 502; constituting altogether nearly four-fifths of the increase of deaths over those for 1860, and falling with peculiar violence and fatality upon our infant population.

DIPHTHERIA made its appearance in an epidemic form in the month of February, 1860, and from that time until the close of 1861 it prevailed to a greater or less extent in all parts of our city. Although sporadic cases had occasionally been met with since 1857, some of which proved fatal, yet there is no public record of a death from diphtheria until the month of February, 1860, when there were fourteen registered. An examination of the record for that month shows that the deaths from zymotic diseases had run up from seventy-six in January to one hundred and seven. Scarlet fever deaths were nearly doubled. What were the particular climatic changes which heralded this increase of epidemic influence I am at a loss to determine, there being nothing special in the meteorological data for that month.

In the month of March of that year the deaths from diphtheria were twenty-two (22); April, seventeen (17); May, twenty-three (23); June, seventeen (17); July, fourteen (14); August, thirty-five (35); September, twenty-six (26). In October they went up to sixty (60) and in November and December they averaged thirty-nine (39). January, 1861, opened with sixty-three (63) deaths; the following five months averaged thirty-seven (37), varying but little in each month until July, when they suddenly rose to sixty-three (63). The remaining five months of the year averaging thirty-seven (37) with only a slight variation.

The remarkable uniformity in the mortality for each of the ten months will not escape notice, much less the fact that during January, the coldest, and July, the warmest month of the year, the deaths from diphtheria doubled themselves, both months furnishing a like number of deaths.

It was not until July, 1860, when the registration law went into operation that any correct account could be presented of the location of particular diseases; but as I have already in a former report given the names of the wards where diphtheria was most active and proved most fatal during the last half of 1860, and as they differ in nowise from those recorded for 1861, I shall proceed to speak of the disease, the number of deaths from it, and its location and character, as it appeared in the latter year.

The whole number of deaths from diphtheria for the year 1861 were five hundred and two (502). Two hundred and fifty-four (254) males, and two hundred and forty-eight (248) females; these proportions do not favour the idea of its being more prevalent among females than males.

Four hundred and eighty-nine (489), or 95 per cent. of the deaths were minors, or, under twenty, and only thirteen (13) were adults; characterizing the disease as one peculiar to childhood. Of these deaths, four hundred and sixty-one (461), or 91 per cent., were under ten years, and three hundred and twenty-four were between two and ten years of age; coinciding with observations made elsewhere, of the particular period of infantile life most liable to an attack from this disease. Nine of the thirteen deaths in adults were under thirty, one was between sixty and seventy, and one was over seventy.

The disease has not been prevalent among children of colour; only seventeen (17), or 3.38 per cent., are charged to them.

The 1st, 17th, and 20th wards bear the heaviest mortality, averaging forty-four (44) each. The 6th, 8th, 10th, 21st, and 22d gave the least, the mean being six (6). From the remaining wards there was an approximate representation of deaths, as well in those which I have enumerated as healthy as in the more unhealthy wards. For example, in the 23d there were twenty-seven (27) deaths, and in the 14th, twenty-five (25) deaths,

these wards (the first named rural in the greater part) are rated as healthy, while in the 19th there were only twenty-nine (29), and in the 2d only twenty-two (22), whereas both of these wards contributed a heavy mortality from other zymotic diseases, and are among the most unhealthy in the list.

While I am of the opinion that diphtheria, like other epidemics, always shows a preference for those localities surrounded by unfavourable hygienic conditions, I am obliged to acknowledge that it has not been exclusively confined to similar localities since its appearance in our city.

As the above statistics prove, and as I have been an eye witness, this terrible disease was to be seen in some of our healthiest sections and in the abodes of refinement and wealth; in rural districts, remarkable for their salubrity, and under circumstances, and in families, where it would be difficult to discover tangible indications of an existing antihygienic condition of any kind whatever; and, as already shown, it has not been confined to any particular season of the year.

These peculiarities, however, are neither new nor confined to our city. In confirmation of this remark, I quote from Hart on Diphtheria as found in Slade's dissertation published in the *Am. Journ. of the Med. Sciences*, vol. xli. p. 306. Alluding to its appearance in England and France, he says:—

"It did not obey any known climatic or meteorological laws. It visited alternately the open hamlets of the rural departments, and the crowded courts of the great cities. It appeared to be equally independent of all atmospheric conditions. Was a theory formed that its intensity depended upon the solar influence, and that the heat of the summer months lent fresh force to its destructive attacks—soon it raged with greater violence in the winter months, and during the cold season—yet moderate temperature has not greatly abated its influence, and it has struck a blow here and there through all seasons."

The same writer attempts to account for its prevalence in healthy localities, amongst the upper classes of society, and of these especially, the more luxurious in their habits, that, being zymotic in its nature, it tends to fasten upon those who are debilitated from previous disease, or whose constitutions are enfeebled by the depressing influences of luxury, indolence, and inactivity, together with the violation of physical and hygienic laws consequent upon the habits of fashionable life. It is among such, he says, that "diphtheria finds its victims pale and anæmic, or grossly sanguineous and unhealthily excited."

The non-identity of diphtheria with scarlet fever, is, I apprehend, no longer a debatable question. The widely different character of the sequelæ of the two diseases, together with the "almost universal experience, that diphtheria does not protect from scarlet fever, nor, on the other hand, does scarlet fever form any defence against diphtheria," are of themselves convincing arguments in favour of the distinctive characters of these two fearful epidemics. Again, that there prevails a striking similarity between diphtheria and scarlet fever, in many of their symptoms, is indisputable, and that diphtheria frequently prevails in conjunction with scarlet fever is also universally admitted. Nevertheless, every impartial and careful observer who has encountered both affections, must arrive at the conclusion that diphtheria is a specific disease.

Without any intention of entering into the history or treatment of diphtheria, in this report, I cannot avoid a brief allusion to the after effects, or

the sequelæ of this severe disease, particularly those which exert their power upon the nervous vitality. The peculiarity of the symptoms, is a form of paralysis, attacking especially, and almost invariably, the soft palate, the muscles adjacent thereto, extending frequently to other and more distant parts of the system.

The most graphic and truthful account of the sequence of diphtheria which I have seen, is that given by M. Faure, and quoted by Slade in his valuable prize essay, to which I would refer for a complete monograph of this disease.

Two cases of diphtheria in my own practice, both of them female children, five and seven years of age, after having passed through the immediate effects of a violent attack of pharyngeal diphtheria, and considered well, presented many of the secondary symptoms in an exceedingly well-marked form; insomuch that had a doubt existed as to the true nature of the primary affection, the peculiar phenomena observed would have identified diphtheria.

The first of these cases I saw in consultation in the spring of 1861. The patient had apparently recovered from the disease, and she was believed both by the physician and parents to be approaching some form of cerebro-spinal affection. There was extreme debility of the entire muscular system, irascibility and mental dulness. The velum palati, the pharynx and muscles of the glottis were so far paralyzed as not only to give an unpleasant nasal twang to the voice, but for some time to prevent the power of speech altogether, and the act of deglutition was so much interfered with that solids could not be swallowed and fluids would frequently be regurgitated through the nostrils. The joints, especially those of the vertebræ and of the limbs, participated in the general weakness and the movements of the child in walking were tottering and uncertain, similar to those of chorea, while the features appeared to have lost in a measure the power of volition.

Great difficulty was experienced in this case in the administration of medicine, and a general hygienic course was advised. The shower bath, exercise, change of air, and a generous diet, with the addition of stimulating frictions to the spinal column and extremities were persisted in for months with only partial relief; at length a visit of several weeks to the ocean in season, with daily sea-bathing completed her entire restoration to health.

The other case is at present under treatment. The child, five years old, was stricken suddenly with diphtheria, about the middle of December, 1861, in a severe form, confining itself to the velum and pharynx, and unattended with laryngeal symptoms. I discontinued my attendance about the 1st of January, my patient having to all appearances recovered. A few days afterwards, the father called my attention to the peculiar nasal tone of his daughter's voice, and remarked that she did not gain her strength. I recognized at once the peculiar nervous effects resulting from an attack of diphtheria. For several days there will be a remission of her symptoms, affording encouragement of an improvement, again, there will be a rapid increase of her nervous debility. Her powers of speech suffer materially, owing to the relaxation and partial paralysis of the soft parts of the palate and fauces. At times, it is difficult to understand her words, while the process of swallowing food is imperfectly performed, and oftentimes, in the act of drinking, the fluid will be thrown back through the nostrils. The muscles of the face and mouth are so far paralyzed as occasionally to produce an involuntary smile, accompanied by singular contortions of the

facial muscles. There is also considerable loss of power over the muscles of the neck, preventing a steady upright position. The whole system is involved, general debility prevailing, the child has lost her vivacity, her appetite has failed, her skin pallid, her countenance dull and sunken, having lost its former lively expression.

I am treating her with nervine tonics, perchloride of iron, quinia and valerianate of ammonia, with stimulating frictions to the back and extremities; a nutritious diet, and exercise when the weather is favourable.

SMALLPOX.—The deaths from this epidemic for the year have reached the high mortality of seven hundred and fifty-eight (758). It exceeds by far the mortality of any former epidemic, and is equal to five per cent. of the aggregate of deaths for the year from all causes.

The following table gives the deaths in Philadelphia from smallpox for a series of fifty-four (54) years from 1807, the first year in which the deaths and their causes were tabulated and published by the Board of Health.

Years.	Deaths from smallpox.	Years.	Deaths from smallpox.	Years.	Deaths from smallpox.	Years.	Deaths from smallpox.
1807	32	1821	...	1835	106	1849	152
1808	145	1822	...	1836	86	1850	40
1809	101	1823	160	1837	81	1851	216
1810	33	1824	325	1838	45	1852	427
1811	117	1825	6	1839	5	1853	57
1812	...	1826	3	1840	63	1854	40
1813	...	1827	188	1841	259	1855	275
1814	...	1828	107	1842	156	1856	390
1815	...	1829	87	1843	36	1857	65
1816	97	1830	86	1844	17	1858	7
1817	52	1831	18	1845	190	1859	2
1818	8	1832	43	1846	251	1860	57
1819	1	1833	168	1847	9	1861	758
1820	...	1834	212	1848	100		
						Total	6279

This table presents the indication of what Prof. Jackson some years since pronounced an epidemic law of periodicity of smallpox. It is evident that from two to five years during this consecutive period the disease appears to have reached its maximum, and then either gradually or rapidly declined to its lowest ratio.

The aggregate of deaths for these fifty-four years has amounted to six thousand two hundred and seventy-nine (6,279). The mean number annually has been one hundred and sixteen (116).

The years which produced the heaviest mortality were 1824, which gave three hundred and twenty-five (325) deaths; 1852, which gave four hundred and twenty-seven (427) deaths; 1856, which furnished three hundred and ninety (390) deaths; and 1861, which gave seven hundred and fifty-eight (758) deaths.

Of the deaths for 1861, the proportion of the sexes was equal, viz., three hundred and seventy-nine (379).

Of these deaths, six hundred and sixty-five (665), or 81 per cent. were minors, or under twenty years of age.

Of the minors, five hundred and seventy-two (572), or 75.46 per cent. of the mortality was among children under ten years of age. The deaths under two years amounted to two hundred and sixty-four (264), or 33.36 per cent.

The inference to be drawn from these statistical facts is, that notwithstanding the ordinance for public vaccination has been so far carried out that the names of more than 10,000 persons have been returned as successfully vaccinated within the year, there must yet remain, according to the above returns of deaths from smallpox among children, many families unprotected. It is evident that these families have not been reached, either through neglect or want of proper canvassing by the collectors of cases for vaccination, or vaccination has been imperfectly performed; or else the parents or guardians or friends, through prejudice or other causes, have refused to have their children vaccinated.

That the ordinance has not been successful in protecting our city from the ravages of this loathsome disease, is a truth which cannot be disputed with the fact before us, of 758 deaths from smallpox on record for the year, of which number 75 per cent. were children, who perished prematurely, in consequence of the ignorance or misguided views of their parents.

In a former report I have alluded to the inadequacy of this voluntary provision to secure us from the ravages of smallpox, and I have elsewhere asserted my belief that nothing less than a compulsory law, with a penalty attached for its violation, would prove an effectual barrier to its introduction. No municipal ordinance can be an efficient system; and from my limited experience on this subject, I am quite prepared to adopt the sentiment of an English writer,[1] that "the absence of an efficient system of public vaccination I cannot but consider a national disgrace. I had almost said a national crime." Nothing less than legislative power applied to the whole State will prove an efficient system, or eradicate smallpox.

Another fact gathered from the mortality tables, and bearing intimately upon the importance for some legal enactment, in order to control smallpox, is, that by far the greater number of deaths have occurred in those wards where the population and the tenements are crowded, where will be found wretchedness and filth, with physical and moral depravity, and where defective sanitary arrangements abound.

In five of the lower wards, bordering on the Delaware River, and embracing within their limits locations answering the above description, there were two hundred and seventy-nine (279) deaths, equal to 36.80 per cent. of the whole number; and, again, in those wards from the 16th to the 20th, inclusive, there were two hundred and eighty-nine (289) deaths, or 38.12 per cent. of the whole. Whereas, in the ten wards from the 6th to the 15th, inclusive, embracing a population in the centre of the city, and living under somewhat more favourable circumstances, both as regards numbers, dwellings, ventilation and other sanitary advantages, there are recorded only one hundred and four (104) deaths, or 13.72 per cent. of the entire mortality.

Consequently, we have ten wards of the city, embracing a population of 222,720 souls, returning less than 14 per cent. of the deaths from smallpox, whilst other ten wards, five in the southeastern section, and five in the northeastern section of the built up portions of the city, with a combined population of two hundred and sixty thousand seven hundred and fifty-four (260,754), numbering only thirty-eight thousand and thirty-four (38,034) more than the former ten wards, returning five hundred and sixty-eight (568) deaths, equivalent to 74.92 per cent.

Nor can any more reliable information be produced, to prove that smallpox, while it does not spare any class of citizens, or pass by favourable

[1] E. C. Seaton, M. D., Trans. National Assoc., 1857, p. 460.

localities, manifests a decided preference for the more unhealthy districts, and wherever can be found a wretched, depraved and crowded population.

Smallpox has been prevailing in our city, as an epidemic, for the past eighteen months. It broke out in the 17th ward, in the month of October, 1860, and before the close of that year was found in the 1st and in the 4th wards at the southeastern extremity of the city. During October, the deaths were eleven; in November, thirteen, and in December nineteen. In all forty-three deaths. Fifteen of these occurred in the 17th ward, five in the 1st, and six in the 4th ward.

During the entire year of 1861, as the record will show, this disease prevailed in those and the adjoining wards with defiant obstinacy. The first five wards returning two hundred and seventy-nine (279) deaths, and the four from the 16th to the 20th, inclusive, in the upper part of the city returning two hundred and eighty-nine (289).

SCARLET FEVER.—The heaviest mortality from any one of the diseases in the zymotic class is affixed to scarlet fever, amounting in the aggregate to eleven hundred and ninety (1190), a higher death rate than on any former year, and equal to 8.22 per cent. of the entire annual mortality.

Of the deaths, five hundred and eighty-two (582) were males, and six hundred and eight (608) females. The proportion, according to sexes, being nearly equal.

From the adult population there is recorded only six deaths, the remainder, eleven hundred and eighty-four (1184) being minors, or those under twenty years, of whom eleven hundred and fifty-six (1156) were within ten years of age. The greatest mortality during any one period of childhood was between two and five years, at which age, six hundred and eight (608) children perished.

Not a death is recorded from this disease in the Almshouse Hospital, and only three from the coloured population.

The deaths throughout the several wards differed very materially according to the location of the ward, as in smallpox; the more crowded and insalubrious wards suffered the most, while those favoured with sanitary improvements shared far less in the destructive mortality from this fatal epidemic.

The disease must have prevailed in a very malignant form in the 15th, 16th, 17th, 18th, 19th and 20th wards, as five hundred and forty-five (545) of the deaths, equal to 48 per cent., came from that cluster, all of which contain neighbourhoods highly favourable to the generation of pestilential diseases, to some of which I have already referred.

In the 20th ward there were one hundred and three (103) deaths, and the seventeenth, which I look upon as the most unhealthy of all, gave ninety-nine (99) deaths, while the 19th, the largest in population, furnished ninety-six (96) deaths.

The rural wards, embracing the 21st, 22d, 23d and 24th, contributed one hundred and twenty-nine (129) of the deaths. The five wards, viz., the 6th, 7th, 8th, 9th and 10th, furnished one hundred and forty (140); and of these the 7th, a section somewhat inimical to health, produced sixty (60).

The 1st and 2d wards gave together, one hundred and two (102) deaths. The 3d, 4th and 5th wards gave only sixty (60) deaths. The 11th, 12th, 13th and 14th wards furnishing one hundred and sixty-nine (169) deaths.

CHOLERA INFANTUM.—This endemic, confined almost entirely to cities, and prevailing during the warm season, contributed 618 deaths. Of this

number 538, or 85 per cent. occurred in the third quarter, July, August and September.

Whilst peculiar to children, it is particularly so to those under two years. In the present instance, 572 or 92 per cent. of the deaths were within that term of existence which embraces the "second summer," a season so much dreaded by mothers, and not without cause, for its destructive tendency to infant life.

Every ward in our city suffered from this disease; even the rural districts were not exempt. The 19th, 7th and 17th wards, however, contributed the highest mortality; while the 1st, 2d, 15th and 20th shared next in extent. These are among the worst wards for health in our city. The 9th, 6th and 14th wards returned the least number of deaths.

Typhoid fever caused 281 deaths.

Hooping cough is represented by 93 deaths. All of these deaths were in children under ten years of age, and 51 or 55 per cent. were within the first year.

The location of these deaths was chiefly in those wards peculiarly liable to infectious diseases, viz., the 1st, 2d, 4th, 7th, 15th, 17th, 18th and 19th, producing 61 deaths, equal to 65 per cent. of the whole. The 6th, 8th, 9th and 22d yielded none. The remaining twelve averaged 2½ deaths.

Measles was quite prevalent during the year, but caused only 74 deaths. With the exception of 7 deaths, in the 7th ward, the force of the disease appeared to have spent itself in the upper wards of the city.

Table V., Class 2. GENERAL SEAT OR SPORADIC DISEASES.—The deaths placed in this class have amounted to 2,304, of which number the minors exceed the adults by 61 per cent. The deaths in this class constitute about 16 per cent. of the entire mortality.

The heaviest mortality from any one disease has been from debility, amounting to 826. More than 50 per cent. of these deaths were in children, of which number 341, or 80 per cent. had not reached the first year of life.

Marasmus foots up 533 deaths. Of these, 319, or 60 per cent. were within the first year of life.

Dropsy furnished 284 deaths, and inanition 124. These diseases have been very general throughout the city, the deaths having been impartially distributed.

Table V., Class 3. The NERVOUS SYSTEM furnished 2,094 deaths, or 14.47 per cent. of the entire mortality.

Convulsions contributed 636 or 30.37 per cent. of these deaths. This disease (?) was peculiarly fatal among children. The deaths under twenty were 606, and those included in this number under one year were 345, or 54.24 per cent. of the whole.

Inflammation of the brain caused 305 deaths. This disease was also fatal among children, as 266 were under 20 years of age, and of these, 223, or 73 per cent. were under five years.

Congestion of the brain contributed 275 deaths, and dropsy of the brain 222. Of this latter disease there were only 4 adult deaths.

Of these three last diseases, the excess of deaths in male children was equal to 48.89 per cent.

Table V., Class 4. The RESPIRATORY SYSTEM.—This class of diseases, very generally make up a large share of the deaths. They number 3232 or 22.33 per cent. of the entire mortality. Three of the causes of death under this head, viz., consumption of the lungs, inflammation of the lungs,

and croup, amounting to 2802, have produced 86 per cent. of the mortality from diseases of this class.

Consumption of the lungs furnished 1817 deaths. This is an excess over those of last year of 12 per cent., and is the highest annual mortality ever recorded for this city.

The deaths of the sexes were nearly equalized. The two decennial periods between 20 and 40, furnished 898 of the deaths equal to 49 per cent.

There were 139 deaths recorded from people of colour, an increase over all former years. The increase may be the result of more accurate reports.

The deaths in persons of foreign birth amounted to 613 or 33.73 per cent. Those of American birth numbered 1008, and 196 were recorded as unknown.

Inflammation of the lungs numbered 681 victims, of which 484 or 71 per cent. were in children. During the first year of life 236 died from this fatal disease.

Croup, another infantile disease produced 304 deaths, of these, 303 were among minors. The period of childhood most liable to croup, is between 2 and 5 years. During this ternary period there were 159 deaths equal to 52 per cent.

The sexes were nearly equalized.

Table V., Class 5. The ORGANS OF CIRCULATION.—Under this head I find 368 deaths. The term disease of the heart, which is too general to afford any information as to the precise character of the malady, furnishes 265, or 72 per cent., of the deaths.

The 8th, one of our healthy wards, returned 20 deaths from disease of the heart. The 7th, an unhealthy one, gave 19. Other causes than those involving a good or bad sanitary condition of the city are productive of these diseases.

There was a small increase over the deaths in this class for 1860. But a decline in those returned "disease of the heart."

Table V., Class 6. DISEASES OF THE DIGESTIVE ORGANS.—Those diseases coming under this class and confined to the organs of nutrition have furnished 686 deaths, or 4.74 per cent., of the mortality. Inflammation of the stomach and bowels caused 238 deaths. Inflammation of the peritoneum 67, and cancer of the stomach 64 deaths.

Table V., Class 7. DISEASES OF THE URINARY ORGANS.—The deaths under this head amounted to 109. The proportion of adults to minors was as 92 to 17. The disproportion of deaths in the sexes was very great, 78 males to 31 females.

Albuminuria, or Bright's disease of the kidneys, yielded 20 deaths, and of these 16 were males and only 4 females, a similar disproportion in the sexes I have noticed before.

Diabetes gave 12 deaths. Disease of the kidneys 29, and inflammation of the bladder 28 deaths.

Table V., Class 8. ORGANS OF GENERATION.—The deaths from diseases of the generative system amounted to 95, with the exception of four, and those between 15 and 20—the deaths were in females over 20 years of age.

Cancer of the uterus caused 30 deaths. Sixteen of these were in women over fifty.

Puerperal fever gave 15, while puerperal convulsions contributed 25 deaths.

Table V., Class 9. ORGANS OF LOCOMOTION.—From this class there were 56 deaths. Rheumatism furnished the largest quota of deaths,

amounting to 23. Diseases of the spine under several distinct heads gave also 23 deaths.

Table V., Class 10. DISEASES OF THE INTEGUMENTARY SYSTEM.—Under this head I find but 6 deaths.

Table V., Class 11. OLD AGE contributed 203 deaths, males 66, and females 137. All vital statistics agree that females are the longest livers. This record gives 67 per cent., in favour of females. This term "Old Age" is not, I imagine, always applied in the strictest sense, as I find in the present instance one death from this cause, located between 50 and 60 years of age, and 11 between 60 and 70 years. They may have been premature.

Table V., Class 12. EXTERNAL CAUSES.—From this class, embracing accidents and violent causes, there have been returned 468 deaths, or 3.30 per cent. of the entire mortality.

Casualties, or accidents not specified, has the credit of 122 deaths. Drowned, 99. Burns and scalds, 81. Suicide, 31, and gunshot-wounds, 21. These two last causes for death have greatly increased over any former year. The latter may be readily accounted for, in consequence of the war and the increased use of firearms. Of the fifty-two deaths from these causes, there were only five females.

A very large proportion of the deaths under this class were among persons born in foreign countries, viz., 124 equal to 26.49 per cent. whilst the deaths from the different wards give the heaviest number in those, where there are located extensive manufactories with their numerous workmen.

The deaths from intemperance were 29—15 females and 14 males.

Table V., Class 13. UNKNOWN, makes up 104 deaths. As usual, under this obscure title, many of the deaths occurring in this and even in other cities, are recorded. With a careful attention to diagnosis, the number could, no doubt, be materially lessened. In the Boston mortality report for 1859, complaint is made that in 69 instances no attempt was made to specify the disease. Dr. Snow, of Providence, R. I., in his report for that city for 1860, makes the folllowing terse remarks in relation to the proper certification of deaths. "A correct public sentiment upon this subject should demand a more strict and accurate inquiry into the cause of every death. As it is," he says, "it is better for statistical purposes that deaths should be reported as from unknown causes, than that they should be incorrectly reported." This hint may probably stir up some of the profession to do better in future.

Table V., Class 14. STILL-BORN.—The still-births, or, the deaths in intra-uterine life, or those which took place during the process of labour, have numbered 630. Of these, 364 were males, and 266 females. The former outnumbering the latter by 98, or 37 per cent.

This mortality was less than the previous year by 11 per cent.

The record does not make any distinction between premature births and still-born, nor does the registration law require it.

An examination into the causes which are so productive of the death of infants before birth, and just at the moment when they are to be ushered into a new existence, would form an interesting and important, yet in some degree at least it might be considered a revolting chapter of vital statistics.

In connection with the subject of infant mortality in this city, I would express the hope that the College might find in this question also a new incentive for scientific investigation.

TABLE IV.—*Interments in the City of Philadelphia from December 29, 1860, to December 28, 1861.*

Division 1. *Mortality classified according to Sex and Age.*

DISEASES.	SEX.				AGES.															ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
Abscess	26	21	7	7	5	3	1	2	1	2	7	10	3	4	6	1	2	..	..	..	33	14	47
Abortion	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
Adynamia or debility	1	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1
Albuminuria	16	4	2	1	..	..	2	..	1	..	4	5	..	7	1	..	..	..	..	..	17	3	20
Anæmia	10	8	7	6	7	1	1	2	1	1	1	2	1	..	..	1	..	..	..	..	5	13	18
Aneurism	6	3	1	1	2	..	..	..	..	..	..	2	..	2	..	1	..	..	..	..	7	2	9
Anthrax or carbuncle	2	4	..	2	1	..	..	..	..	..	1	1	2	..	1	1	..	..	..	..	4	2	6
Apoplexy	83	79	6	5	5	..	1	2	..	3	8	11	23	28	36	33	12	..	..	..	151	11	162
Aphthæ	2	4	2	4	4	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	6
Asthma	5	12	..	3	1	1	1	..	..	..	1	..	4	3	3	2	1	..	..	..	14	3	17
Asphyxia	30	17	29	15	41	3	..	..	..	..	1	..	..	..	..	1	1	..	..	..	3	44	47
Burns and scalds	27	54	24	37	6	13	24	11	3	4	11	4	1	..	2	..	1	1	..	..	20	61	81
Cancer	21	34	1	..	..	1	..	..	..	..	3	9	9	13	12	7	1	..	..	..	54	1	55
" of the breast	..	9	..	..	..	..	..	..	..	..	..	1	3	3	..	..	1	1	..	..	9	..	9
" " bladder	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2	..	2
" " eye	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1
" " face	3	1	..	..	..	..	..	..	..	..	..	..	1	1	1	..	1	..	..	..	4	..	4
" " heart	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
" " liver	4	5	..	..	..	..	..	..	..	..	1	1	1	3	2	1	..	..	..	..	9	..	9
" " lungs	..	2	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	2	..	2
" " nose	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
" " rectum	3	1	..	..	..	..	..	..	..	..	1	..	2	..	1	..	..	..	..	..	4	..	4
" " spleen	1	..	1	..	..	..	..	..	1	..	1	11	13	12	14	8	..	..	..	..	59	5	64
" " stomach	27	37	3	2	..	2	3	..	..	..	..	..	1	1	..	..	..	..	..	..	1	..	1
" " skin	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	3	..	3
" " throat	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" " testicles	1	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	30	..	30
" " uterus	..	30	..	..	..	..	..	..	..	..	2	6	6	8	7	..	..	..	..	..	1	..	1
" " œsophagus	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
Casualties	103	19	40	11	5	8	12	11	9	6	24	18	11	8	6	3	1	..	..	..	71	51	122
Caries	1	1	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	2
" of the spine	2	1	2	1	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	3	3
Congestion	2	1	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	3	..	3
" of the brain	161	114	93	79	63	30	41	22	7	9	20	23	18	16	13	9	3	..	1	..	103	172	275
" " bowels	2	3	2	..	..	..	2	..	..	..	1	1	..	..	..	1	..	..	..	..	3	2	5
" " liver	7	5	5	2	6	..	1	..	..	..	..	3	1	1	..	..	..	..	..	..	5	7	12
" " lungs	59	51	38	31	33	12	13	7	1	3	4	7	2	7	7	8	6	..	..	..	41	69	110

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.

Division 1. *Mortality classified according to Sex and Age.*

DISEASES.	SEX.				AGES.														ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
Convulsions	336	300	325	281	345	111	105	38	3	4	7	8	7	3	3	1	1	..	..	..	30	606	636
" puerperal	..	25	..	3	..	..	..	..	..	3	14	7	1	..	..	..	..	..	..	..	22	3	25
Consumption of lungs	910	907	136	166	54	34	37	26	24	127	475	423	277	169	115	44	12	..	..	..	1515	302	1817
" stomach and bowels	7	8	4	2	2	1	1	2	..	..	2	2	1	2	2	..	..	..	..	..	9	6	15
Compression of the brain	3	1	1	1	2	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	2	2	4
Concussion of the brain	7	4	2	3	2	2	1	..	..	..	1	1	..	..	1	2	1	..	..	..	6	5	11
" " spine	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Collapsus	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" of the lungs	1	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Coup de soleil	2	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	1	2
Chicken-pox	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Chlorosis	..	2	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	2	..	2
Constipation	3	1	1	..	..	..	..	1	..	..	..	1	1	..	1	..	..	..	..	..	3	1	4
Cirrhosis	14	7	..	..	..	..	..	..	..	..	1	3	4	4	7	2	..	..	..	..	21	..	21
Coxalgia	2	2	2	2	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	4	4
Croup	154	150	153	150	37	51	159	50	5	1	..	1	..	..	..	..	..	..	..	..	1	303	304
Cyanosis	38	26	38	25	62	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	63	64
Colic	3	3	2	2	3	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	4	6
Coma	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Cramps	7	9	5	7	10	..	2	..	..	..	1	1	..	..	1	1	..	..	..	..	4	12	16
Cholera	2	5	..	2	..	1	..	..	1	..	..	3	..	1	..	1	..	..	..	..	5	2	7
" infantum	316	302	316	302	400	172	40	6	..	..	..	..	..	..	..	..	..	..	..	..	..	618	618
" morbus	11	7	7	4	8	1	1	1	..	..	..	2	1	..	1	3	..	..	..	..	7	11	18
" asphyxia	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1
Diabetes	11	1	2	..	1	..	..	..	..	..	1	2	1	3	2	1	..	..	..	..	10	2	12
Diphtheria	254	248	248	241	56	81	212	112	21	7	5	4	1	1	1	1	..	..	..	..	13	489	502
Diuresis	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
Debility	442	384	244	181	341	29	33	15	4	3	30	44	47	59	63	94	46	14	4	..	401	425	826
Dysentery	82	75	51	40	39	27	15	9	..	1	11	11	9	11	9	12	2	1	..	..	66	91	157
Drowned	93	6	32	3	..	..	5	15	9	6	31	14	9	5	3	2	..	..	..	..	64	35	99
Diarrhœa	103	80	66	48	70	27	13	2	..	2	6	11	7	11	15	11	8	..	..	..	69	114	183
Dyspepsia	3	5	..	1	1	..	..	..	..	..	..	1	3	..	..	2	1	..	..	..	7	1	8
Debauch	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
Dropsy	143	141	59	43	10	4	46	27	8	7	11	30	27	46	27	31	8	1	1	..	182	102	284
" abdominal	4	4	2	..	..	1	..	..	..	..	..	1	..	2	2	1	..	..	..	..	6	2	8
" of the brain	134	88	132	86	94	66	43	15	..	..	..	1	..	1	1	1	..	..	..	..	4	218	222
" " chest	34	29	25	12	5	3	13	12	2	2	1	1	1	7	6	10	..	..	..	..	26	37	63

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.

Division 1. *Mortality classified according to Sex and Age.*

DISEASES.	SEX.				AGES.														ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
Dropsy of the heart	14	17	6	7	2	..	5	5	1	..	1	3	1	4	2	5	2	..	..	..	18	13	31
" " ovaries	..	2	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2	..	2
Disease of the brain	67	45	47	34	34	18	15	11	1	2	4	5	10	6	3	2	1	..	..	..	31	81	112
" " bladder	2	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	2	..	2
" " heart	136	129	40	28	12	9	11	10	10	16	19	32	26	39	34	38	8	1	..	..	197	68	265
" " liver	19	26	6	3	6	..	1	2	..	..	4	4	10	7	5	6	..	..	..	..	36	9	45
" " lungs	9	14	5	6	7	2	2	..	..	..	5	1	2	..	1	2	1	..	..	..	12	11	23
" " kidneys	22	7	4	2	..	..	2	2	..	2	5	2	6	3	3	3	..	1	..	..	23	6	29
" " ovaries	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
" " pelvis	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
" " prostate gland	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	2
" " spine	5	6	4	4	..	2	2	1	1	2	..	1	..	2	..	..	..	..	..	..	3	8	11
" " stomach and bowels	12	5	4	2	4	..	1	..	..	1	2	2	1	2	2	2	..	..	..	..	11	6	17
" " throat	1	1	1	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
" " uterus	..	3	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	..	..	3	..	3
Effusion on brain	46	27	42	24	24	18	15	6	2	1	..	3	2	..	1	..	1	..	..	..	7	66	73
" chest	1	3	1	2	1	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1	3	4
" spinal marrow	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Erysipelas	39	25	19	17	27	1	3	2	2	1	2	3	8	4	4	4	3	..	..	..	28	36	64
Epilepsy	10	12	3	4	2	..	2	..	..	3	3	3	5	2	2	..	..	..	..	..	15	7	22
Eczema	1	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Enlargement of the heart	5	7	1	2	..	..	1	..	1	1	1	4	1	..	2	1	..	..	..	..	9	3	12
" " liver	..	2	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Emphysema of lungs	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	1
Exposure and debauch	2	1	..	1	1	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	1	3	3
Fracture	3	1	2	1	..	1	..	1	1	..	..	..	..	..	1	..	..	..	..	..	1	3	4
" of the arm	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1
" " leg	2	1	2	..	..	..	..	..	1	1	..	..	..	..	1	..	..	..	..	..	1	2	3
" " liver	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1
" " skull	6	2	..	..	..	..	..	..	..	..	2	2	1	2	1	..	..	..	..	..	8	..	8
" " spine	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	2	..	..	1	..	1
" " thigh	1	3	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	4	..	4
Fatty degeneration of the liver	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	..	1
Fungus medullaris	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Fever	5	1	2	1	..	1	..	1	1	..	1	..	..	..	..	2	..	..	..	..	3	3	6
" of the brain	4	3	4	2	..	2	1	1	..	2	1	..	..	..	..	..	..	..	..	..	1	6	7
" bilious	3	4	1	..	..	..	1	..	..	..	2	..	2	..	..	2	..	..	..	..	6	1	7

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.

Division 1. *Mortality classified according to Sex and Age.*

DISEASES.	SEX.				AGES.														ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
Fever, camp	3	..	2	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	1	2	3
" continued	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
" congestive	2	4	1	2	..	..	..	2	1	..	..	..	1	1	..	1	..	..	..	..	3	3	6
" enteric	9	..	4	..	..	..	..	1	3	..	5	..	..	..	..	..	..	..	..	..	5	4	9
" hectic	2	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	2
" intermittent	1	2	1	1	..	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	1	2	3
" nervous	2	3	2	1	..	..	1	1	..	1	..	..	2	..	..	..	..	..	..	..	2	3	5
" puerperal	..	15	..	..	..	..	..	..	..	..	7	7	1	..	..	..	..	..	..	..	15	..	15
" remittent	12	10	7	4	1	..	5	2	2	1	2	3	1	..	3	1	1	..	..	..	11	11	22
" scarlet	582	608	580	604	86	192	615	263	24	4	2	3	..	..	1	..	..	..	..	..	6	1184	1190
" typhoid	148	133	46	52	1	4	23	25	8	37	88	30	36	14	10	5	..	..	..	..	183	98	281
" typhus	17	28	5	7	..	..	2	5	2	3	8	8	5	5	3	3	1	..	..	..	33	12	45
" rheumatic	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
Gangrene	13	33	1	14	2	6	3	4	..	..	7	5	2	2	5	6	3	1	..	..	31	15	46
Gout	4	1	..	..	..	..	..	..	..	..	..	1	..	1	1	2	..	..	..	..	5	..	5
Hooping-cough	45	48	45	48	51	24	17	1	..	..	..	..	..	..	..	..	..	..	..	..	..	93	93
Hypercatharsis	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1
Hydrophobia	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
Hernia	7	7	..	..	1	..	..	..	..	..	1	2	1	1	4	4	..	..	..	..	13	1	14
Hemorrhage	38	34	17	16	15	..	6	5	2	5	12	9	5	6	3	1	3	..	..	..	39	33	72
" of the lungs	15	10	1	2	1	..	1	1	..	..	5	5	8	1	2	..	1	..	..	..	22	3	25
" stomach and bowels	9	3	1	..	1	..	..	..	..	..	4	2	3	..	..	2	..	..	..	..	11	1	12
" uterus	..	13	..	1	..	..	..	..	..	1	1	9	2	..	..	..	..	..	..	..	12	1	13
Inflammation	..	2	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	1	2
" of the brain	184	121	158	108	84	64	75	30	9	4	11	12	5	8	3	..	..	..	..	..	39	266	305
" " bronchi	71	67	42	36	42	17	13	2	4	..	8	7	9	10	14	8	4	..	..	..	60	78	138
" " bladder	13	15	2	..	1	1	..	..	..	..	7	6	2	1	4	4	2	..	..	..	26	2	28
" " chest	3	1	3	..	3	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4
" " foot and leg	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
" " heart	11	12	6	3	..	..	3	2	2	2	..	2	6	1	2	3	..	..	..	..	14	9	23
" " kidneys	5	3	2	1	..	..	1	1	1	..	..	..	..	1	1	1	2	..	..	..	5	3	8
" " lungs	367	314	262	222	236	98	93	36	7	14	35	31	30	35	30	26	8	2	..	..	197	484	681
" " liver	20	20	4	2	3	1	..	1	1	..	1	7	7	6	10	2	1	..	..	..	34	6	40
" " larynx	15	9	14	8	6	4	8	3	1	..	..	1	..	..	..	1	..	..	..	..	2	22	24
" " nose	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" " ovaries	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
" " pleura	14	7	4	3	2	1	2	2	..	..	5	1	2	2	2	1	..	1	..	..	14	7	21

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.

Division 1. *Mortality classified according to Sex and Age.*

DISEASES.	SEX.				AGES.															ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
Inflammation of peritoneum	24	43	9	8	5	1	..	6	2	3	17	11	9	4	7	2	..	..	..	..	50	17	67
" stomach & bowels	107	131	63	67	53	23	26	15	6	7	21	27	17	13	19	9	2	..	..	..	108	130	238
" spine	5	3	4	3	1	1	2	3	..	..	..	..	..	1	..	..	..	..	..	..	1	7	8
" throat	1	2	1	2	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3
" tonsils	1	2	1	2	..	..	..	3	..	..	..	..	..	..	..	1	..	..	..	..	..	3	3
" prostate gland	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
" uterus	..	4	..	..	..	..	..	..	..	..	3	1	..	..	..	..	..	..	..	..	4	..	4
Inanition	79	45	66	38	89	7	4	2	1	1	3	4	2	2	6	2	1	..	..	..	20	104	124
Intemperance and exposure	14	15	..	..	..	..	..	..	..	..	5	15	4	4	1	..	..	..	..	..	29	..	29
Intussusception	4	4	2	2	1	..	2	1	..	..	1	..	1	..	1	1	..	..	..	..	4	4	8
Ileus	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	2	..	2
Jaundice	13	11	5	3	6	..	2	..	..	..	2	2	..	4	3	4	1	..	..	..	16	8	24
Laceration of the brain	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Malformation	14	3	14	3	17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	17
Mania	3	8	..	..	..	..	..	..	..	..	3	5	2	..	1	..	..	..	..	..	11	..	11
Mania a potu	30	2	..	..	..	..	..	..	..	..	6	12	9	3	2	..	..	..	..	..	32	..	32
Marasmus	285	248	267	228	319	101	53	18	3	1	3	4	4	6	9	8	4	..	..	..	38	495	533
Measles	36	38	34	37	15	22	29	4	1	..	1	1	1	..	..	..	..	..	..	..	3	71	74
Neglect	..	1	..	1	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1
Neuralgia	1	3	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	4	..	4
Nervous prostration	1	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	..	2
Old age	66	137	..	..	..	..	..	..	..	..	..	..	..	1	11	57	95	34	4	1	203	..	203
Œdema of the glottis	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" " lungs	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Obstruction of the bowels	2	5	1	..	1	..	..	..	..	..	..	1	..	2	2	1	..	..	..	..	6	1	7
Ossification of the heart	3	1	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	4	..	4
" " arteries	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1
Palsy	75	84	6	1	..	2	3	..	..	2	2	4	16	21	39	50	16	2	2	..	152	7	159
Poisoning	3	4	1	1	..	1	1	..	..	..	..	2	..	1	..	2	..	..	..	..	5	2	7
Pyohæmia	12	8	3	4	2	1	..	1	2	1	5	2	3	1	1	1	..	..	..	..	13	7	20
Purpura	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
Pemphigus infantilis	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Rheumatism	10	13	6	1	..	..	..	4	2	1	2	2	6	1	2	3	..	..	..	..	16	7	23
Rupture of the heart	1	1	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	2	..	2
" " uterus	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
Rupia	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Suicide	26	5	..	..	..	..	..	..	..	..	5	9	10	2	3	2	..	..	..	..	31	..	31

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.
Division 1. *Mortality classified according to Sex and Age.*

DISEASES.	SEX.				AGES.															ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
Scrofula	46	30	39	26	22	15	14	7	4	3	3	4	4	..	..	..	..	..	..	..	11	65	76
Smallpox	379	379	282	333	159	105	200	108	23	20	65	45	23	8	1	1	..	..	..	..	143	615	758
Softening of the brain	19	10	1	3	1	..	1	2	..	..	3	2	3	4	8	5	..	..	..	..	25	4	29
" " stomach	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1
" " lung	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
Sore throat	4	4	4	3	..	1	2	3	..	1	..	..	..	..	1	..	..	..	..	..	1	7	8
Stillborn	364	266	364	266	630	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	630	630
Stone	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	2	..	2
Syphilis	2	7	1	4	4	..	..	..	..	1	1	2	1	..	..	..	..	..	..	..	4	5	9
Suspension	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
Strangulation	1	1	1	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Stricture of the œsophagus	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	2	..	2
Suffocation	2	3	2	3	1	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	5	5
Syncope	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
Tetanus	18	8	10	6	9	2	1	1	1	2	1	5	..	2	2	..	..	..	..	..	10	16	26
Teething	13	17	13	17	17	12	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30	30
Tabes mesenterica	22	13	20	12	10	13	7	2	..	..	1	..	1	..	1	..	..	..	..	..	3	32	35
Tumours	7	16	3	2	1	1	3	..	..	..	1	2	5	6	2	2	..	..	..	..	18	5	23
Ulceration	1	1	..	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	2
" of stomach and bowels	10	8	2	..	..	..	1	..	..	1	5	1	4	1	3	1	1	..	..	..	16	2	18
" throat	5	6	2	5	2	..	3	2	..	..	..	1	..	1	2	..	..	..	..	..	4	7	11
Uræmia	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	2	..	2
Unknown	51	53	27	29	41	6	6	1	2	..	11	7	15	4	5	6	..	..	..	..	48	56	104
Violence	11	2	1	2	1	..	..	..	1	1	5	3	1	1	..	..	..	..	..	..	10	3	13
Wounds	4	..	1	..	..	..	..	..	..	1	2	..	1	..	..	..	..	..	..	..	3	1	4
" cannon-ball	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
" gunshot	20	..	7	..	..	..	..	..	..	7	8	2	3	..	..	..	..	..	..	..	13	7	20
Worms	2	1	2	1	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3
Want and exposure	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
Total	7582	6886	4800	4217	3799	1473	2134	1018	240	353	1149	1097	857	712	677	606	278	62	12	1	5451	9017	14468

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.

Division 2. *Mortality classified according to Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																						UNKNOWN WARDS.
				United States.	Foreign.	Unknown.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Abscess	1	2	3	38	6	3	4	3	2	2	1	1	4	..	2	1	1	1	3	1	1	1	..	3	..	4	3	..	3	2	1
Abortion	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Adynamia or debility	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Albuminuria	..	1	1	14	5	1	..	2	..	1	..	2	1	3	1	2	..	..	1	1	1	..	..	1	1	2	..	..	..	..	..
Anæmia	..	..	..	16	2	..	..	2	..	2	1	..	2	..	..	..	..	1	..	1	1	..	..	3	1	1	1	..	1	1	..
Aneurism	1	1	1	5	3	1	..	..	..	..	1	1	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	1	2	..
Anthrax or carbuncle	1	..	..	4	1	1	1	1	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1	..
Apoplexy	10	6	6	86	59	17	9	9	8	9	6	4	8	7	5	9	5	5	2	4	5	3	3	6	5	10	2	3	3	20	6
Aphthæ	..	..	..	6	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	..	..	2	..	..
Asthma	3	1	..	7	6	4	1	..	..	2	..	1	2	..	..	..	1	1	..	..	..	1	1	..	2	..	..	..	..	4	1
Asphyxia	1	..	..	47	..	..	6	5	1	2	3	1	4	2	1	1	1	..	..	3	2	1	1	2	2	2	1	1	2	3	..
Burns and scalds	..	1	3	70	10	1	2	4	3	10	2	3	4	7	1	..	1	2	4	1	4	4	3	2	8	2	1	3	4	3	..
Cancer	1	..	2	32	21	2	3	2	..	3	1	1	3	3	1	1	4	2	3	2	2	4	3	3	1	1	1	1	2	3	3
" of the breast	1	..	..	4	4	1	1	..	..	..	..	..	..	..	..	1	1	1	..	..	..	1	..	..	1	..	..	..	..	2	1	..
" " bladder	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" " eye	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" " face	1	..	..	2	1	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..
" " heart	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" " liver	..	..	..	6	3	..	..	..	1	1	1	..	2	2	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..
" " lungs	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" " nose	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
" " rectum	..	..	..	1	3	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" " spleen	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
" " stomach	4	2	1	32	27	5	5	2	1	3	5	4	5	5	1	1	1	..	2	3	3	1	3	1	3	4	..	1	3	4	2
" " skin	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" " throat	..	..	..	..	3	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..
" " testicles	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" " uterus	1	2	..	17	12	1	2	1	2	1	1	1	3	1	..	1	1	2	2	2	2	..	1	..	1	3	..	..	1	2	..
" " œsophagus	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Casualties	1	2	4	70	46	6	8	11	2	3	3	3	8	3	1	2	4	4	1	4	9	2	4	1	11	13	4	2	6	5	4
Caries	..	..	..	1	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
" of the spine	..	..	..	3	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Congestion	..	..	..	3	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..
" of the brain	12	18	4	225	36	14	28	16	8	19	12	6	10	12	8	6	6	2	9	8	9	7	18	8	23	13	5	1	17	18	2
" " bowels	..	..	..	3	2	..	2	..	..	..	1	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
" " liver	..	..	..	10	2	..	..	2	..	..	..	..	1	..	..	1	1	..	..	..	1	..	..	2	2	1	..	..	1	..	..
" " lungs	6	2	3	84	21	5	3	7	2	8	6	2	5	2	1	2	7	3	..	2	3	..	8	4	8	15	1	..	3	11	4

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.
Division 2. *Mortality classified according to Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																						UNKNOWN WARDS.
				United States.	Foreign.	Unknown.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Convulsions	11	27	6	600	23	13	32	33	16	32	20	15	25	14	11	13	24	21	17	13	44	31	47	26	68	47	11	11	19	29	11
" puerperal	2	2	..	15	8	2	1	2	1	..	..	..	3	..	1	2	..	..	1	1	2	..	..	2	3	1	..	2	..	3	..
Consumption of lungs	154	139	28	1008	613	196	95	101	51	104	71	29	124	78	46	52	38	41	54	59	83	48	89	56	125	84	28	33	38	224	38
" stomach & bowels	..	1	..	8	6	1	..	..	..	2	..	..	..	..	1	..	..	..	..	..	1	3	1	1	2	..	..	1	1	1	1
Compression of the brain	..	..	..	2	2	..	..	..	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	1	..	..
Concussion of the brain	..	1	..	9	2	..	3	1	..	1	..	2	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	1	..	..
" " spine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Collapsus	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
" of the lungs	1	..	..	2	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..
Coup de soleil	..	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chicken-pox	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Chlorosis	..	..	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Constipation	..	..	..	2	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	..	1	..	..	..	..
Cirrhosis	4	..	..	8	8	5	1	..	..	4	..	1	..	1	2	1	..	..	1	1	..	..	..	..	..	1	..	..	2	5	1
Coxalgia	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	..
Croup	..	8	5	298	3	3	15	8	11	16	10	4	12	6	4	8	8	4	8	13	25	18	18	9	27	14	19	7	19	11	5
Cyanosis	2	2	1	62	1	1	10	2	2	..	3	..	3	4	2	3	..	..	1	5	3	..	2	2	2	2	1	3	6	5	2
Colic	..	..	1	5	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	1	..	..	..	1	..	1
Coma	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cramps	..	..	..	13	3	..	..	1	..	1	..	..	..	..	1	..	1	2	1	2	1	..	1	..	1	4	..	..	..	..	1
Cholera	..	..	1	4	3	..	1	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
" infantum	2	29	10	616	1	1	38	33	20	27	20	12	41	21	9	19	20	25	13	12	38	18	40	26	53	39	17	17	12	23	15
" morbus	..	..	1	12	5	1	..	..	..	..	2	1	2	..	..	..	1	..	..	1	3	1	2	..	3	1	..	..	..	..	..
" asphyxia	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	3	..
Diabetes	3	..	..	5	5	2	..	1	1	..	..	..	1	1	..	2	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..
Diphtheria	4	17	11	479	12	11	46	22	12	12	16	7	19	5	10	23	24	16	27	25	20	19	44	14	29	45	5	5	17	18	11
Diuresis	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Debility	41	63	5	575	175	76	52	40	21	39	36	25	35	26	26	27	21	14	19	27	47	22	51	36	57	40	19	15	9	17	47
Dysentery	12	7	9	110	30	17	7	6	4	5	5	3	5	8	5	3	7	2	3	4	5	5	10	9	19	2	3	3	4	17	4
Drowned	..	1	5	45	30	24	6	3	3	6	1	4	2	6	2	4	3	1	1	..	4	1	2	3	6	..	5	1	1	2	27
Diarrhœa	21	8	6	132	33	18	10	6	6	8	6	3	10	3	1	6	7	3	3	1	9	6	10	17	16	6	3	4	3	25	5
Dyspepsia	..	..	..	6	2	..	1	1	..	..	..	..	..	3	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..
Debauch	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Dropsy	7	25	10	178	92	14	24	13	4	13	12	2	14	9	6	7	9	7	10	5	12	13	13	8	22	18	10	3	11	19	10
" abdominal	2	1	..	3	3	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	3	..	1	..	..	..	..	2	..
" of the brain	1	9	5	213	3	6	10	10	12	9	7	7	3	2	7	7	9	9	9	4	16	7	11	11	20	14	3	7	5	13	5
" " chest	..	..	3	51	10	2	2	7	3	..	2	3	1	4	..	2	3	1	4	3	4	6	1	..	1	4	..	1	4	4	..

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.

Division 2. *Mortality classified according to Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																						UNKNOWN WARDS.
				United States.	Foreign.	Unknown.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Dropsy of the heart	1	2	..	19	10	2	..	1	..	2	1	..	1	2	..	1	..	2	3	1	1	..	2	..	4	1	1	1	3	3	1
" " ovaries	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Disease of the brain	1	1	3	99	9	4	5	9	2	2	6	2	4	3	3	6	3	2	7	4	17	6	1	3	3	14	..	..	..	5	2
" " bladder	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
" " heart	12	14	11	169	78	18	12	11	5	11	5	5	19	20	12	12	10	4	10	8	12	7	6	8	13	14	6	7	8	20	9
" " liver	..	..	1	32	13	..	4	3	..	1	1	..	1	2	2	2	..	..	1	1	3	3	3	1	5	5	3	..	2	1	..
" " lungs	..	1	2	18	5	..	4	1	..	1	1	..	1	1	..	..	..	1	2	1	3	..	1	..	1	2	1	..	..	..	..
" " kidneys	3	2	..	16	8	5	..	3	..	2	..	..	3	1	2	1	..	1	..	2	..	2	1	1	..	..	1	1	1	6	..
" " ovaries	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
" " pelvis	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" " prostate gland	..	..	..	1	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" " spine	1	2	..	8	2	1	..	2	..	1	..	..	2	..	..	..	..	..	..	..	1	1	..	1	..	..	..	1	..	2	..
" " stomach & bowels	..	..	1	14	3	..	..	..	..	2	2	..	..	1	1	..	..	..	1	..	2	1	..	..	1	..	..	3	1	1	..
" " throat	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
" " uterus	..	..	..	2	1	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Effusion on brain	5	5	3	67	1	5	5	1	4	2	2	3	8	1	6	5	..	4	1	6	3	1	1	2	1	5	2	1	..	4	2
" chest	..	..	..	3	1	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..
" spinal marrow	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Erysipelas	4	3	..	48	11	5	6	5	1	2	2	..	3	2	1	3	..	2	..	2	2	2	5	2	8	2	1	2	4	5	2
Epilepsy	5	1	..	10	7	5	2	..	1	1	..	..	1	1	..	..	..	..	..	..	3	2	..	1	..	..	1	..	1	8	..
Eczema	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Enlargement of the heart	..	1	..	7	4	1	..	..	..	1	1	..	1	..	1	1	..	..	1	..	1	..	..	..	..	..	1	1	2	..	..
" " liver	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..
Emphysema of lungs	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Exposure and debauch	2	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..
Fracture	..	..	..	3	1	..	1	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	1	..
" of the arm	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
" " leg	..	1	..	2	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..
" " liver	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
" " skull	1	..	..	4	3	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	2	..	..	..	1	2	..	..	..	1	..	1
" " spine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" " thigh	..	..	..	2	1	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Fatty degeneration of the liver	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fungus medullaris	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Fever	..	..	..	3	3	..	..	1	..	..	..	..	1	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..
" of the brain	..	..	1	7	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	..	1	..	..	..	..
" bilious	..	..	..	4	3	..	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	1	..	..	..	..	..	1	..	..

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.

Division 2. *Mortality classified according to Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																						UNKNOWN WARDS.
				United States.	Foreign.	Unknown	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Fever, camp	..	..	1	2	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
" continued	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" congestive	..	2	..	5	1	..	2	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" enteric	..	..	..	8	1	..	..	..	..	1	..	..	1	1	1	..	..	..	..	..	1	..	..	..	1	..	..	..	1	1	1
" hectic	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
" intermittent	..	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..
" nervous	..	..	..	4	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	2	..	..	..	..	..	..	..	1	..
" puerperal	..	..	1	7	5	3	2	1	..	..	..	1	1	..	..	..	..	..	..	1	..	2	..	1	3	..	1	..	..	..	1
" remittent	..	3	3	17	3	2	4	2	..	..	1	1	..	..	..	1	..	..	..	..	..	1	..	..	..	2	1	..	..	5	1
" scarlet	..	7	22	1166	15	9	59	43	15	30	15	19	60	13	23	25	49	48	36	36	81	75	99	91	96	103	37	13	43	36	23
" typhoid	5	12	12	198	69	14	14	18	4	12	5	3	17	9	10	10	6	5	11	13	9	10	19	12	23	13	8	7	11	13	7
" typhus	4	..	2	26	13	6	1	1	2	2	3	2	..	..	..	1	..	4	1	..	3	2	..	..	4	3	2	..	2	9	1
" rheumatic	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gangrene	5	..	1	32	9	5	4	..	1	4	..	1	..	2	..	1	1	1	..	..	3	5	2	2	4	5	..	1	1	7	..
Gout	..	..	..	5	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	..	1	..	..	..	..	..	..	..	..	..
Hooping-cough	..	4	2	92	..	1	7	6	1	8	2	..	6	..	..	1	5	2	2	2	8	4	7	7	12	4	1	..	3	3	..
Hypercatharsis	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Hydrophobia	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Hernia	..	..	1	5	8	1	..	..	..	1	..	1	3	..	1	..	..	1	..	1	..	1	..	..	1	2	..	1	..	..	..
Hemorrhage	1	4	1	48	21	3	2	5	1	4	6	1	5	6	1	1	6	1	1	3	4	4	2	7	2	1	1	1	2	4	1
" of the lungs	1	2	3	18	4	3	..	1	1	..	1	1	2	1	1	1	..	..	..	1	2	..	..	2	..	2	..	..	2	1	3
" stomach & bowels	..	..	..	10	2	..	..	1	..	..	1	1	..	2	..	..	..	..	2	..	..	..	..	1	..	1	..	..	1	1	1
" uterus	..	1	..	6	7	..	1	..	..	..	1	1	1	..	..	..	1	..	..	1	1	..	..	..	..	2	2	..	1	..	..
Inflammation	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
" of the brain	1	8	4	278	22	5	30	16	10	16	5	6	12	8	8	11	14	7	5	12	17	12	19	17	26	13	5	6	3	13	10
" " bronchi	6	17	2	111	18	9	13	6	7	14	6	2	9	5	2	4	2	1	1	8	13	4	7	3	3	7	2	3	2	7	5
" " bladder	3	4	..	12	13	3	2	1	3	1	4	..	2	..	..	1	1	..	2	..	1	1	..	..	2	1	..	1	1	4	..
" " chest	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..
" " foot and leg	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" " heart	1	2	..	13	9	1	1	2	..	2	2	..	1	1	1	1	..	1	..	1	1	..	..	..	3	3	..	2	..	1	..
" " kidneys	..	..	..	6	2	..	1	1	..	..	1	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	1	..
" " lungs	15	53	21	567	85	29	45	25	22	37	22	18	43	13	24	16	15	17	18	16	35	21	25	23	52	35	20	14	41	47	16
" " liver	1	1	..	19	20	1	2	2	..	2	1	1	4	5	1	3	..	1	1	2	1	2	1	1	1	1	3	2	2	1	..
" " larynx	..	1	1	23	1	..	2	2	..	..	..	1	5	2	..	2	1	..	2	..	2	1	1	1	..	2	..	1	..	..	..
" " nose	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" " ovaries	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
" " pleura	4	1	..	7	8	6	1	..	2	1	1	..	3	1	2	..	..	1	..	..	..	..	1	..	..	3	..	..	..	5	..

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Continued.

Division 2. *Mortality classified according to Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																					UNKNOWN WARDS.
				United States.	Foreign.	Unknown.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Inflammation of peritoneum	5	2	3	36	25	6	4	5	3	3	3	..	1	..	6	1	..	3	1	2	2	2	2	4	7	3	2	..	1	9	1
" stomach & bowels	9	7	5	168	58	12	18	15	7	11	5	5	11	2	7	7	11	6	4	8	13	8	18	8	19	5	15	4	7	15	4
" spine	..	1	..	6	2	..	..	2	..	..	..	1	..	1	..	1	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..
" throat	..	..	..	3	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
" tonsils	..	..	..	3	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
" prostate gland	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..
" uterus	..	1	..	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Inanition	13	3	3	111	7	6	9	10	3	9	2	2	2	1	1	11	1	2	3	3	2	5	1	4	13	7	3	5	..	18	4
Intemperance and exposure	..	1	..	3	10	16	2	1	..	4	1	..	..	..	..	..	1	..	..	..	2	..	1	..	1	..	..	1	1	..	..	15
Intussusception	..	..	..	7	1	..	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	1	..	..	1	..	..	1	..	1	..	..
Ileus	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Jaundice	2	1	2	16	5	3	..	1	1	..	..	1	3	2	1	..	1	1	..	..	..	3	..	1	1	..	..	..	3	3	..	..
Laceration of the brain	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	2	..	..	..	1	2	1	1	..	..	..	..	..	..
Malformation	..	..	..	17	..	..	4	..	..	1	..	..	1	..	..	..	..	1	2	..	1	..	..	..	..	..	..	..	1	4	1	..
Mania	1	..	..	6	2	3	..	..	..	..	..	..	1	..	..	..	1	..	2	..	1	..	1	1	..	..	..	..	1	8	4	..
Mania a potu	4	..	1	12	10	10	4	2	2	1	..	2	..	1	..	..	..	..	1	2	1	..	1	1	..	..	..	..	1	8	4	..
Marasmus	41	36	3	485	16	32	22	24	16	18	18	15	28	11	13	10	12	12	17	17	29	22	33	26	32	30	15	12	12	54	12	1
Measles	..	..	1	72	1	1	1	..	1	1	2	..	7	1	1	1	4	7	..	1	4	4	2	8	14	5	4	3	1	..	1	..
Neglect	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	..	..	..	..	..	..
Neuralgia	..	..	..	2	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Nervous prostration	..	..	..	1	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Old age	2	13	6	95	97	11	10	11	10	12	8	4	8	13	12	7	6	7	6	8	8	5	2	15	10	8	2	3	9	9	4	..
Œdema of the glottis	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
" " lungs	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Obstruction of the bowels	..	..	..	5	2	..	1	..	..	..	..	..	2	1	..	..	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..
Ossification of the heart	..	1	..	4	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..
" " arteries	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Palsy	8	12	7	97	48	14	2	8	3	4	8	..	7	7	8	9	1	6	10	6	12	5	9	1	5	8	2	2	13	13	3	..
Poisoning	..	..	..	4	3	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	..	2	..	1	..	..	..	..	1	..	..
Pyohæmia	6	..	..	7	9	4	1	1	..	..	1	..	1	1	1	1	1	..	..	..	..	..	..	..	1	2	1	..	1	7	..	..
Purpura	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Pemphigus infantilis	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rheumatism	2	1	4	18	3	2	2	1	..	..	..	..	..	..	1	1	2	2	1	..	2	..	..	..	3	..	..	1	..	3	..	..
Rupture of the heart	..	..	..	1	3	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" " uterus	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Rupia	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Suicide	..	..	..	12	13	6	1	1	..	..	1	..	1	..	4	1	2	..	1	..	3	1	1	..	1	2	1	1	3	2	4	..

TABLE IV.—*Interments in the City of Philadelphia during* 1861—Concluded.

Division 2. *Mortality classified according to Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																								UNKNOWN WARDS.
				United States.	Foreign.	Unknown	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Scrofula	7	12	2	63	6	7	4	5	4	3	3	2	2	1	1	4	6	1	..	6	1	3	4	3	5	5	..	1	2	7	1
Smallpox	7	38	4	668	52	38	47	95	33	63	41	6	10	6	4	8	24	10	10	10	15	34	97	45	70	43	26	4	9	15	29
Softening of the brain	2	..	..	20	7	2	2	1	3	2	3	..	..	2	1	2	..	..	2	1	..	..	2	1	..	..	1	1	2	3	..
" " stomach	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" " lung	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sore throat	..	..	..	6	2	..	1	1	..	1	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	1	1	..
Stillborn	..	39	3	629	..	1	45	23	22	28	24	19	43	16	18	17	33	23	15	13	43	29	30	20	49	30	4	8	7	14	54
Stone	..	..	..	..	2	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Syphilis	4	1	..	6	..	3	..	..	..	..	..	1	..	..	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	5	..
Suspension	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Strangulation	..	..	..	2	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stricture of œsophagus	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	1	..
Suffocation	..	..	..	5	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..
Syncope	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tetanus	8	..	1	19	2	5	3	..	1	..	1	..	..	1	1	..	3	..	..	1	1	..	1	..	..	3	..	..	..	9	..
Teething	..	..	..	30	..	..	1	1	..	2	1	1	1	..	..	..	..	..	..	1	4	..	2	3	7	1	1	1	..	2	1
Tabes mesenterica	..	4	..	33	2	..	4	4	1	..	2	1	2	..	1	2	1	..	..	..	1	..	3	3	2	6	..	..	1	1	..
Tumours	..	..	1	13	9	1	3	..	..	..	1	3	..	1	1	1	1	..	..	1	1	1	1	1	1	1	..	1	1	2	..
Ulceration	..	..	..	1	1	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" of stomach & bowels	..	1	1	12	5	1	..	2	2	1	2	..	2	..	1	..	..	..	1	2	1	1	..	..	..	..	2	..	..	..	..
" throat	..	1	..	10	..	1	1	1	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	1	..	1	1	..	1	1	..
Uræmia	..	..	..	1	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Unknown	26	6	5	60	13	31	2	4	1	2	3	2	6	5	2	2	2	1	2	..	2	2	7	1	8	2	3	..	5	31	4
Violence	..	1	1	4	6	3	1	1	..	2	..	..	1	..	..	..	2	1	..	..	..	..	..	..	..	..	..	1	1	..	2
Wounds	..	..	1	..	3	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	1
" cannon-ball	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" gunshot	..	..	6	14	3	3	2	2	..	..	..	..	1	..	..	1	..	..	..	1	1	..	..	..	2	..	..	1	2	1	..
Worms	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	..	..	..	..	..
Want and exposure	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Total	543	714	298	11323	2300	845	875	758	400	681	488	286	733	427	356	422	452	362	397	426	768	529	828	596	1085	809	332	248	434	1032[1]	446

[1] Deduct deaths in Philadelphia Almshouse, 543; net amount of deaths in Twenty-fourth Ward, 489.

TABLE V.—*Classified Mortality for the year* 1861.

Division 1. *Showing Sex and Age.*

DISEASES.	SEX.				AGES.														ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
CLASS I.—ZYMOTIC, EPIDEMIC, ENDEMIC, AND CONTAGIOUS DISEASES.																						
1st Quarter. January, February, March.																						
Cholera infantum	2	2	2	2	3	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4
" morbus	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Diarrhœa	7	7	6	3	4	2	3	..	..	1	1	..	..	..	3	..	1	..	..	..	5	9	14
Diphtheria	81	65	79	63	20	33	57	27	4	1	1	1	..	1	1	..	..	..	..	..	4	142	146
Dysentery	7	2	4	2	4	..	1	1	..	..	..	..	2	1	..	..	..	..	..	..	3	6	9
Erysipelas	14	7	4	5	8	..	1	..	..	..	1	2	..	2	3	3	1	..	..	..	12	9	21
Fever, congestive	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1
" remittent	1	2	1	1	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	1	2	3
" scarlet	154	175	153	173	24	70	157	69	5	1	1	1	..	..	1	..	..	..	..	..	3	326	329
" typhoid or enteric	26	35	10	19	..	1	7	7	1	13	17	3	6	5	1	..	..	..	..	..	32	29	61
" typhus	3	8	1	2	..	..	..	2	..	1	3	3	..	1	..	1	..	..	..	..	8	3	11
Hooping-cough	6	6	6	6	6	..	5	1	..	..	..	..	..	..	..	..	..	..	..	..	..	12	12
Measles	5	9	5	9	2	6	5	1	..	..	..	..	..	..	..	..	..	..	..	..	..	14	14
Smallpox	114	104	83	90	44	27	58	31	7	6	22	12	9	2	..	..	..	..	..	..	45	173	218
Syphilis	1	3	..	3	2	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	3	4
Thrush or aphthæ	1	2	1	2	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3
Total first quarter	423	428	356	380	118	141	297	140	17	23	46	23	18	12	9	5	2	..	..	..	115	736	851
2d Quarter. April, May, June.																						
Cholera	..	2	..	1	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	1	1	2
" infantum	16	21	16	21	32	3	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	37	37
" morbus	2	1	1	1	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	1	2	3
Diarrhœa	10	11	7	6	7	4	1	1	..	..	1	2	1	1	1	..	2	..	..	..	8	13	21
Diphtheria	50	54	48	52	17	17	43	16	4	3	2	1	..	..	..	1	..	..	..	..	4	100	104
Dysentery	10	12	8	7	5	5	4	1	..	..	2	..	..	..	3	2	..	..	..	..	7	15	22
Erysipelas	10	13	3	10	10	..	1	1	..	1	..	1	6	..	1	1	1	..	..	..	10	13	23
Fever, bilious	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
" congestive	1	1	1	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	1	1	2
" continued	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
" intermittent	1	1	1	..	..	..	1	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1	2
" nervous	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" remittent	1	2	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	1	..	3
" scarlet	191	212	191	212	31	58	208	97	9	..	..	..	..	..	..	..	..	..	..	..	..	403	403

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 1. *Showing Sex and Age.*

DISEASES.	SEX.				AGES.														ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
CLASS I. ZYMOTICS, &c.—continued.																						
2d Quarter—continued.																						
Fever, typhoid or enteric	34	29	9	8	..	..	5	6	2	4	18	11	9	4	2	2	..	..	..	..	46	17	63
" typhus	5	10	2	1	..	..	1	..	2	..	1	1	3	3	2	2	..	..	..	..	12	3	15
Hooping-cough	9	6	9	6	9	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	15
Measles	16	11	15	11	7	7	10	2	..	..	..	..	1	..	..	..	..	..	..	..	1	26	27
Smallpox	129	138	93	121	62	39	60	35	8	10	24	16	7	4	1	1	..	..	..	..	53	214	267
Syphilis	..	2	..	1	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	1	2
Thrush or aphthæ	1	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Varicella	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Total second quarter	487	530	406	460	185	136	339	162	26	18	50	35	27	13	10	12	4	..	..	..	151	866	1017
3d Quarter. July, August, September.																						
Cholera	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1
" infantum	290	267	290	267	358	159	35	5	..	..	..	..	..	..	..	..	..	..	..	..	..	557	557
" morbus	8	6	5	3	7	1	..	..	..	..	..	2	1	..	1	2	..	..	..	..	6	8	14
Diarrhœa	65	47	48	35	55	17	8	1	..	2	3	7	3	3	5	6	2	..	..	..	29	83	112
Diphtheria	73	75	71	73	15	23	65	35	6	..	2	2	..	..	..	..	..	..	..	..	4	144	148
Dysentery	56	48	38	23	25	19	9	7	..	1	7	9	3	7	6	8	2	1	..	..	43	61	104
Erysipelas	10	4	8	2	6	1	1	..	2	..	1	..	1	1	..	..	1	..	..	..	4	10	14
Fever	3	..	2	..	..	1	..	..	1	..	..	..	..	..	..	1	..	..	..	..	1	2	3
" bilious	2	3	..	..	..	..	..	..	..	..	1	..	2	..	..	2	..	..	..	..	5	..	5
" congestive	1	1	..	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	1	1	2
" intermittent	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" nervous	1	2	1	1	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	1	2	3
" remittent	6	6	4	3	1	..	2	2	1	1	1	..	1	..	3	..	..	..	..	..	5	7	12
" scarlet	142	118	142	117	22	30	145	55	7	..	..	1	..	..	..	..	..	..	..	..	1	259	260
" typhoid or enteric	43	35	16	13	..	3	7	8	3	8	24	6	12	4	2	1	..	..	..	..	49	29	78
" typhus	4	4	1	1	..	..	..	..	..	2	2	2	1	1	..	..	..	..	..	..	6	2	8
Hooping-cough	12	16	12	16	14	11	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28	28
Measles	11	13	11	13	5	9	8	1	1	..	..	..	..	..	..	..	..	..	..	..	..	24	24
Smallpox	74	82	55	72	31	17	42	28	6	3	11	12	4	2	..	..	..	..	..	..	29	127	156
Syphilis	1	1	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	2
Thrush or aphthæ	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Total third quarter	802	731	705	642	541	291	327	143	27	18	53	41	30	19	17	20	5	1	..	..	186	1347	1533

TABLE V.—*Classified Mortality for the year* 1861—Continued.

Division 1. *Showing Sex and Age.*

DISEASES.	SEX.				AGES.														ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
CLASS I.—ZYMOTICS, &c.—continued.																						
4th Quarter. October, November, December.																						
Cholera infantum	8	12	8	12	7	10	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	20
Diarrhœa	21	15	5	4	4	4	1	..	..	..	1	2	3	7	..	6	5	3	..	..	27	9	36
Diphtheria	50	54	50	53	4	8	47	34	7	3	..	..	1	..	..	..	..	..	..	..	1	103	104
Dysentery	9	13	1	8	5	3	1	..	..	..	2	2	4	3	..	2	..	..	..	..	13	9	22
Erysipelas	5	1	4	..	3	..	..	1	..	..	..	..	1	1	..	..	..	..	..	..	2	4	6
Fever	2	1	..	1	..	..	..	1	..	..	1	..	..	..	..	1	..	..	..	..	2	1	3
" bilious	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" congestive	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" camp	3	..	2	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	1	2	3
" nervous	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
" remittent	4	..	2	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	2	2	4
" scarlet	95	103	94	102	9	34	105	42	3	3	1	1	..	..	..	..	..	..	..	..	2	196	198
" typhoid or enteric	54	34	15	12	1	..	4	5	5	12	34	10	9	1	5	2	..	..	..	..	61	27	88
" typhus	5	6	1	3	..	..	1	3	..	..	2	2	1	..	1	..	1	..	..	..	7	4	11
Hooping-cough	18	20	18	20	22	10	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	38	38
Measles	4	5	3	4	1	..	6	..	..	..	1	1	..	..	..	..	..	..	..	..	2	7	9
Smallpox	62	55	51	50	22	22	40	14	2	1	8	5	3	..	..	..	..	..	..	..	16	101	117
Syphilis	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
Total fourth quarter	341	322	255	270	78	91	216	100	19	21	52	25	23	12	6	11	6	3	..	..	138	525	663
Total annual mortality from epidemics	2053	2011	1722	1752	922	659	1179	545	89	80	201	124	98	56	42	48	17	4	..	..	590	3474	4064
CLASS II.—UNCERTAIN OR GENERAL SEAT, SPORADIC DISEASES.																						
Abscess	26	21	7	7	5	3	1	2	1	2	7	10	3	4	6	1	2	..	..	..	33	14	47
Anthrax	2	4	..	2	1	..	..	..	..	1	1	1	..	..	1	1	..	..	..	..	4	2	6
Anæmia	10	8	7	6	7	1	1	2	1	1	1	2	1	..	..	1	..	..	..	..	5	13	18
Cancer or scirrhus	27	42	1	..	..	1	..	..	..	..	3	12	13	15	13	10	2	..	..	..	68	1	69
" of breast	..	9	..	..	..	..	..	..	..	..	..	1	3	3	..	..	1	1	..	..	9	..	9
Cramp	7	9	5	7	10	..	2	..	..	..	1	1	..	..	1	1	..	..	..	..	4	12	16
Cyanosis	38	26	38	25	62	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	63	64
Debility	442	384	244	181	341	29	33	15	4	3	30	44	47	59	63	94	46	14	4	..	401	425	826
Disease of throat	1	1	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Dropsy	143	141	59	43	10	4	10	27	8	7	11	30	27	46	27	31	8	1	1	..	182	102	284
Gangrene	13	33	1	14	2	6	3	4	..	..	7	5	2	2	5	6	3	1	..	..	31	15	46
Gout	4	1	..	..	..	..	..	1	..	..	..	1	..	1	1	2	..	..	..	..	5	..	5
Hectic fever	2	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	2
Hemorrhage	38	34	17	16	15	..	6	5	2	5	12	9	5	6	3	1	3	..	..	..	36	33	72

TABLE V.—*Classified Mortality for the year* 1861—Continued.

Division 1. *Showing Sex and Age.*

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 1. *Showing Sex and Age.*

DISEASES.	SEX.				AGES.																		
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.	Adults.	Minors.	Total.
CLASS II.—UNCERTAIN OR GENERAL SEAT, SPORADIC DISEASES—continued.																							
Inflammation	..	2	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	1	2
" of throat	1	2	1	2	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3
" of leg	1	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
" of tonsils	1	2	1	2	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	3	3
Inanition	79	45	66	38	89	7	4	2	1	1	3	4	2	2	6	2	1	..	..	..	20	104	124
Marasmus	285	248	267	228	319	101	53	18	3	1	3	4	4	6	9	8	4	..	..	..	38	495	533
Malformation	14	3	14	3	17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	17
Scrofula	46	30	39	26	22	15	14	7	4	3	3	4	4	..	..	..	..	..	..	..	11	65	75
Sore throat	4	4	4	3	..	1	2	3	..	1	..	..	..	..	1	..	..	..	..	..	1	7	8
Tabes mesenterica	22	13	20	12	10	13	7	2	..	..	1	..	1	..	1	..	..	..	..	..	3	32	35
Tumours	7	16	3	2	1	1	3	..	..	..	1	2	5	6	2	2	..	..	..	..	18	5	23
Ulceration	1	1	..	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	2
" of throat	5	6	2	5	2	..	3	2	..	..	..	1	..	1	2	..	..	..	..	..	4	7	11
Total	1219	1085	798	625	914	184	182	94	24	25	84	132	119	151	143	160	70	17	5	..	881	1423	2304
CLASS III.—NERVOUS SYSTEM.																							
Apoplexy	83	79	6	5	5	..	1	2	..	3	8	11	23	28	36	33	12	..	..	..	151	11	162
Congestion of the brain	161	114	93	79	63	30	41	22	7	9	20	23	18	16	13	9	3	..	..	..	103	172	275
Compression "	3	1	1	1	2	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	2	2	4
Convulsions	336	300	325	281	345	111	105	38	3	4	7	8	7	3	3	1	1	..	..	..	30	606	636
Concussion of the brain	7	4	2	3	2	2	1	..	..	..	1	1	..	..	1	2	1	..	..	..	6	5	11
Coup de soleil	2	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	1	2
Coma	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Disease of the brain	67	45	47	34	34	18	15	11	1	2	4	5	10	6	3	2	1	..	..	..	31	81	112
Dropsy "	134	88	132	86	94	66	43	15	..	..	..	1	..	1	1	1	..	..	..	..	4	218	222
Effusion "	46	27	42	24	24	18	15	6	2	1	..	3	2	..	1	..	1	..	..	..	7	66	73
Epilepsy	10	12	3	4	2	..	2	..	..	3	3	3	5	2	2	..	..	..	..	..	15	7	22
Fever of the brain	4	3	4	2	..	2	1	1	..	2	1	..	..	..	..	..	..	..	..	..	1	6	7
Hydrophobia	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Inflammation of the brain	184	121	158	108	84	64	75	30	9	4	11	12	5	8	3	..	..	..	..	..	39	266	305
Mania	3	8	..	..	..	..	..	..	..	..	3	5	2	..	1	..	..	..	..	..	11	..	11
Mania à potu	30	2	..	..	..	..	..	..	..	..	6	12	9	3	2	..	..	..	..	..	32	..	32
Neuralgia	1	3	..	..	..	..	..	..	..	..	1	..	..	1	1	1	..	..	..	..	4	..	4
Palsy	75	84	6	1	..	2	3	..	..	2	2	4	16	21	39	50	16	2	2	..	152	7	159
Softening of the brain	19	10	1	3	1	..	1	2	..	..	3	2	3	4	8	5	..	..	..	..	24	4	29
Tetanus	18	8	10	6	9	2	1	1	1	2	1	5	..	2	2	..	..	..	..	..	10	16	26
Total	1184	910	831	638	665	316	304	129	23	32	72	98	100	95	116	104	35	2	3	..	625	1469	2094

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 1. *Showing Sex and Age.*

DISEASES.	SEX.				AGES.														ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
CLASS IV.—DISEASES OF RESPIRATORY SYSTEM.																							
Asthma	5	12	..	3	1	1	1	..	..	..	1	..	4	3	3	2	1	..	..	..	14	3	17
Congestion of the lungs	59	51	38	31	33	12	13	7	1	3	4	7	2	7	7	8	6	..	..	..	41	69	110
Consumption of the lungs	910	907	136	166	54	34	37	26	24	127	475	423	277	169	115	44	12	..	..	..	1515	302	1817
Croup	154	150	153	150	37	51	159	50	5	1	..	1	..	..	..	..	..	..	..	..	1	303	304
Disease of the lungs	9	14	5	6	7	2	2	..	..	..	5	1	2	..	1	2	1	..	..	..	12	11	23
Effusion of the chest	1	3	1	2	1	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1	3	4
Emphysema of the lungs	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Dropsy of the chest	34	29	25	12	5	3	13	12	2	2	1	1	1	7	6	10	..	..	..	..	26	37	63
Hemorrhage of the lungs	15	10	1	2	1	..	1	1	..	..	5	5	8	1	2	..	1	..	..	..	22	3	25
Inflammation of the bronchi	71	67	42	36	42	17	13	2	4	..	8	7	9	10	14	8	4	..	..	..	60	78	138
" " chest	3	1	3	1	3	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4
" " larynx	15	9	14	8	6	4	8	3	1	..	..	1	..	..	..	..	..	..	..	..	2	22	24
" " lungs	367	314	262	222	236	98	93	36	7	14	35	31	30	35	30	26	8	2	..	..	197	484	681
" " pleura	14	7	4	3	2	1	2	2	..	..	5	1	2	2	2	1	..	1	..	..	14	7	21
Total	1657	1575	684	643	428	224	343	140	44	148	539	478	335	234	181	102	33	3	..	..	1905	1327	3232
CLASS V.—ORGANS OF CIRCULATION.																							
Aneurism	6	3	1	1	2	..	..	..	..	..	..	2	..	2	2	1	..	..	..	..	7	2	9
Disease of the heart	136	129	40	28	12	9	11	10	10	16	19	32	26	39	34	38	8	1	..	..	197	68	265
Dropsy	14	18	6	8	2	..	5	6	1	..	1	3	1	4	2	5	2	..	..	..	18	14	32
Enlargement "	5	7	1	2	..	..	1	..	1	1	1	4	1	..	2	1	..	..	..	..	9	3	12
Inflammation "	11	12	6	3	..	..	3	2	2	2	..	2	6	1	2	3	..	..	..	..	14	9	23
Ossification "	3	1	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	4	..	4
Pyohæmia	12	8	3	4	2	1	..	1	2	1	5	2	3	1	1	1	..	..	..	..	13	7	20
Rupture of the heart	1	1	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	2	..	2
Syncope	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
Total	188	180	57	46	18	10	20	19	16	20	28	45	37	47	45	52	10	1	..	..	265	103	368
CLASS VI.—DISEASES OF THE DIGESTIVE ORGANS.																							
Consumption of the stomach and bowels	7	8	4	2	2	1	1	2	..	..	2	2	1	2	2	..	..	..	..	..	9	6	15
Cancer of the stomach	27	37	3	2	..	2	3	..	..	..	1	11	13	12	14	8	..	..	..	..	59	5	64
" spleen	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1
" liver	4	5	..	..	..	..	..	..	..	..	..	1	1	3	2	1	..	..	..	..	9	..	9
" rectum	3	1	..	..	..	..	..	..	..	..	1	..	2	..	1	..	..	..	..	..	4	..	4
Cirrhosis	14	7	..	..	..	..	..	..	..	..	1	3	4	4	7	2	..	..	..	..	21	..	21
Constipation	3	1	1	..	..	..	..	1	..	..	..	1	1	..	1	..	..	..	..	..	3	1	4

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 1. *Showing Sex and Age.*

Table V.—*Classified Mortality for the year* 1861—Continued.
Division 1. *Showing Sex and Age.*

DISEASES.	SEX.				AGES.															ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
CLASS VI.—Digestive Organs—continued.																						
Colic	3	3	2	2	3	1	..	..	..	..	..	..	1	1	..	..	..	..	..	2	4	6
Congestion of the bowels	2	3	2	..	..	..	2	..	..	..	1	1	..	..	1	1	..	..	..	3	2	5
" " liver	7	5	5	2	6	..	1	..	..	..	..	3	..	1	..	1	..	..	..	5	7	12
Disease of the liver	19	26	6	3	6	..	1	2	..	..	4	4	10	7	5	6	..	..	..	36	9	45
" " stomach and bowels	12	5	4	2	4	..	1	..	..	1	2	2	1	2	2	2	..	..	..	11	6	17
Dropsy of the abdomen	4	4	2	..	..	1	..	1	..	..	..	1	..	2	2	1	..	..	..	6	2	8
Dyspepsia	3	5	..	1	1	..	..	..	..	..	..	1	3	..	..	2	1	..	..	7	1	8
Enlargement of the liver	..	2	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Hemorrhage of the stomach and bowels	9	3	1	..	1	..	..	..	..	..	4	2	3	..	..	2	..	..	..	11	1	12
Hernia	7	7	..	1	1	..	..	..	..	..	1	2	1	1	4	4	..	..	..	13	1	14
Inflammation of the stomach and bowels	107	131	63	67	53	23	26	15	6	7	21	27	17	13	19	9	2	..	..	108	130	238
" " peritoneum	24	43	9	8	5	1	..	6	2	3	17	11	9	4	7	2	..	..	..	50	17	67
" " liver	20	20	4	2	3	1	..	1	1	..	1	7	7	6	10	2	1	..	..	34	6	40
Ileus	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	2	..	2
Intussusception	4	4	2	2	1	..	2	1	..	..	1	..	1	..	1	1	..	..	..	4	4	8
Jaundice	13	11	5	3	6	..	2	..	..	..	2	2	..	4	3	4	1	..	..	16	8	24
Obstruction of the bowels	2	5	1	..	1	..	..	..	..	..	..	1	..	2	2	1	..	..	..	6	1	7
Stricture of the œsophagus	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	2	..	2
Teething	13	17	13	17	17	12	1	..	..	..	..	..	..	..	..	..	..	..	..	..	30	30
Ulceration of the stomach and bowels	10	8	2	..	..	..	1	..	..	1	5	1	4	1	3	1	1	..	..	16	2	18
Worms	2	1	2	1	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	3	3
Total	323	363	132	117	112	42	42	31	10	12	66	83	80	65	85	50	8	..	..	437	249	686
CLASS VII.—Diseases of the Urinary System.																						
Albuminuria	16	4	2	1	..	..	2	..	1	..	4	5	..	7	1	..	..	..	..	17	3	20
Cancer of the bladder	1	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	2	..	2
" " testicles	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Diabetes	11	1	2	..	1	..	1	..	..	..	1	2	1	3	2	1	..	..	..	10	2	12
Disease of the kidneys	22	7	4	2	..	..	2	2	..	2	5	2	6	3	3	3	..	1	..	23	6	29
" " bladder	2	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	2	..	2
" " prostate gland	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	2	..	2
Inflammation of the kidneys	5	3	2	1	..	..	1	1	1	..	..	..	..	1	1	2	..	..	..	5	3	8
" " bladder	13	15	2	..	1	1	..	..	..	..	7	6	2	1	4	4	2	..	..	26	2	28
" " prostate gland	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1
Stone in bladder	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	2	..	2
Uræmia	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	2	..	2
Total	78	31	13	4	2	1	7	3	2	2	17	17	9	16	15	11	6	1	..	92	17	109

TABLE V.—*Classified Mortality for the year* 1861—Continued.

Division 1. *Showing Sex and Age.*

DISEASES.	SEX.				AGES.															ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
CLASS VIII.—DISEASES OF THE ORGANS OF GENERATION.																						
Cancer of the uterus	..	30	..	..	..	..	..	..	..	..	2	6	6	8	7	1	..	..	..	..	30	..	30
Disease of the ovaries	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
" " uterus	..	3	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	..	..	3	..	3
Dropsy of the ovaries	..	2	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2	..	2
Hemorrhage of the uterus	..	13	..	1	..	..	..	..	..	1	1	9	2	..	..	..	..	..	..	..	12	1	13
Inflammation " "	..	2	..	..	..	..	..	..	..	..	3	1	..	..	..	..	..	..	..	..	4	..	4
" " ovaries	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
Puerperal fever	..	15	..	..	..	..	..	..	..	..	7	7	1	..	..	..	..	..	..	..	15	..	15
" convulsions	..	25	..	3	..	..	..	..	..	3	14	7	1	..	..	..	..	..	..	..	22	3	25
Rupture of uterus	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
Total	..	95	..	4	..	..	..	..	..	4	28	34	12	9	7	1	..	..	..	..	91	4	95
CLASS IX.—DISEASES OF THE ORGANS OF LOCOMOTION.																						
Caries	1	1	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	1	2
" of the spine	2	1	2	1	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	3	3
Concussion of the spine	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Coxalgia	3	2	3	2	..	..	..	4	1	..	..	..	..	..	..	..	..	..	..	..	..	5	5
Disease of the pelvis	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
" " spine	5	6	4	4	..	2	2	1	1	2	..	1	..	2	..	..	..	..	..	..	3	8	11
Effusion on spinal marrow	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Fracture of spine	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
Inflammation of the spine	5	3	4	3	1	1	2	3	..	..	..	..	..	1	..	..	..	..	..	..	1	7	8
Rheumatism	10	13	6	1	..	..	..	4	2	1	2	2	6	1	2	3	..	..	..	..	16	7	23
Total	29	27	21	12	2	4	4	14	6	3	3	4	7	4	2	3	..	..	..	..	23	33	56
CLASS X.—DISEASES OF THE INTEGUMENTARY SYSTEM.																						
Cancer of the skin	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	.	1
Eczema	1	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Pemphigus	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1
Purpura	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
Rupia	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Total	4	2	2	2	4	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	2	4	6

Total	4	2	2	2	4	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	4	6

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 1. *Showing Sex and Age.*

DISEASES.	SEX.				AGES.															ADULTS.	MINORS.	TOTAL.
	Males.	Females.	Boys.	Girls.	Under 1 year.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	110 to 120.			
CLASS XI.—OLD AGE	66	137	..	..	..	..	..	..	..	..	..	..	..	1	11	57	95	34	4	1	203	..	203
CLASS XII.—EXTERNAL CAUSES.																							
Asphyxia	30	17	29	15	41	3	..	..	..	..	1	..	..	..	..	1	1	..	..	..	3	44	47
Burns and scalds	27	54	24	37	6	13	24	11	3	4	11	4	1	..	2	..	1	1	..	..	20	61	81
Casualties	103	19	40	11	5	8	12	11	9	6	24	18	11	8	6	3	1	..	..	..	71	51	122
Drowned	93	6	32	3	..	..	5	15	9	6	31	14	9	5	3	2	..	..	..	..	64	35	99
Debauch	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1
Exposure and want	2	2	..	1	1	..	..	..	..	..	2	..	..	1	..	..	..	..	..	..	3	1	4
Fracture	14	8	4	1	..	1	..	1	2	1	3	2	2	3	2	1	2	2	..	..	17	5	22
Intemperance	14	15	..	..	..	..	..	..	..	..	5	15	4	4	1	..	..	..	..	..	29	..	29
Neglect	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Poisoning	3	4	1	1	..	1	1	..	..	..	..	2	..	1	..	2	..	..	..	..	5	2	7
Suicide	26	5	..	..	..	..	..	..	..	..	5	9	10	2	3	2	..	..	..	..	31	..	31
Suspension by the neck	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
Strangulation	1	1	1	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
Suffocation	2	3	2	3	1	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	5	5
Violence	11	2	1	2	1	..	..	..	1	1	5	3	1	1	..	..	..	..	..	..	10	3	13
Wounds	4	..	1	..	..	..	..	..	..	1	2	..	1	..	..	..	..	..	..	..	3	1	4
" gunshot	21	..	7	..	..	..	..	..	..	7	9	2	3	..	..	..	..	..	..	..	14	7	21
Total	352	218	142	76	57	26	44	41	24	26	99	70	42	25	17	11	5	3	..	..	272	218	490
CLASS XIII.—UNKNOWN	51	53	27	29	41	6	6	1	2	..	11	7	15	4	5	6	..	..	..	..	48	56	104
CLASS XIV.—STILLBORN	364	266	384	266	630	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	630	630

TABLE V.—*Classified Mortality for the year* 1861—Continued.

Division 2. *Showing Location, Colour, Nativity, and Wards.*

DISEASES.	Almshouse.	People of colour.	Country.	Nativity.			Wards.																							Unknown Wards.
				United States.	Foreign.	Unknown	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
CLASS I.—Zymotic, Epidemic, Endemic, and Contagious Diseases.																														
1*et Quarter.* January, February, March.																														
Cholera infantum	..	..	..	4	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	..	..
" morbus	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Diarrhœa	..	1	1	12	2	..	1	..	1	1	..	..	1	..	1	1	..	..	..	..	3	..	2	1	1	..	..	..	..	..
Diphtheria	2	3	4	139	4	3	10	8	5	3	5	1	7	2	3	6	9	3	5	4	4	4	21	5	9	11	2	2	3	5	5
Dysentery	2	1	..	6	1	2	..	..	1	2	..	..	1	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	2	..
Erysipelas	1	1	..	16	4	1	1	1	1	2	1	..	1	1	..	1	..	2	..	1	..	1	2	..	1	1	..	1	1	1	1
Fever, congestive	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" remittent	..	..	..	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..
" scarlet	..	1	8	324	3	2	26	24	6	18	4	4	23	2	3	11	13	19	9	10	16	21	13	15	20	21	13	2	16	5	7
" typhoid or enteric	1	3	..	47	11	3	3	4	2	1	1	1	4	2	4	5	1	1	4	3	1	3	4	1	2	3	2	1	1	4	3
" typhus	..	..	..	6	5	..	..	1	1	1	1	..	..	..	..	..	..	2	1	..	..	1	..	..	..	1	1	..	..	1	..
Hooping-cough	..	..	..	12	..	..	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	1	3	3	..	..	..	1	1	..
Measles	..	..	..	14	..	..	1	..	..	..	2	..	1	..	1	..	..	..	..	..	..	1	..	1	3	3	..	..	1	..	..
Smallpox	7	16	1	187	17	14	21	17	3	26	7	3	6	..	3	1	3	7	1	..	7	6	40	10	19	6	8	1	2	10	10
Syphilis	2	1	..	4	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..
Thrush or aphthæ	..	..	..	3	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..
Total first quarter	15	27	14	778	48	25	66	55	20	55	21	11	44	8	15	26	27	34	21	18	32	37	85	37	59	48	26	7	27	32	26
2*d Quarter.* April, May, June.																														
Cholera	..	..	..	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
" infantum	..	3	..	37	..	..	2	..	1	2	1	..	2	2	1	1	4	1	..	3	3	..	3	4	3	..	3	..	..	..	1
" morbus	..	..	..	2	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..
Diarrhœa	1	2	..	18	3	..	..	1	..	2	3	..	1	..	..	..	2	..	1	..	..	1	..	1	4	2	..	..	..	2	1
Diphtheria	2	1	1	98	3	3	10	7	..	1	3	1	3	1	1	6	5	2	2	7	5	2	8	3	7	13	..	1	8	6	1
Dysentery	3	..	..	15	4	3	2	..	..	1	..	..	..	2	..	..	3	..	..	1	1	1	1	2	5	..	..	..	..	3	..
Erysipelas	3	2	..	14	5	4	2	2	..	..	1	..	2	1	1	1	..	..	..	..	1	..	..	2	4	..	..	..	3	3	..
Fever, bilious	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
" congestive	..	1	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" continued	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" intermittent	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
" nervous	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
" remittent	..	..	1	2	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
" scarlet	..	2	6	398	3	2	14	8	3	3	2	8	14	5	9	5	18	21	20	15	21	33	37	41	29	43	13	5	11	9	10

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 2. *Showing Location, Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																						UNKNOWN WARDS.
				United States.	Foreign.	Unknown.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
CLASS I.—ZYMOTICS, &c.—continued.																													
2*d Quarter*—continued.																													
Fever, typhoid or enteric	2	4	3	41	19	3	2	4	1	6	1	..	6	2	..	3	1	2	3	4	2	1	3	5	2	..	1	2	2	4	3
" typhus	4	..	..	7	2	6	..	..	..	1	1	1	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	8	1
Hooping-cough	..	..	..	15	..	..	..	1	1	1	..	..	..	..	..	..	..	1	..	2	3	..	1	1	3	..	..	..	..	1	..
Measles	..	..	1	26	1	..	..	..	1	..	..	..	1	..	..	..	1	5	..	1	..	3	1	6	2	1	1	3	..	..	..
Smallpox	..	12	..	236	18	13	10	21	12	15	23	..	1	2	..	4	7	3	4	4	5	16	32	15	35	29	11	2	4	3	7
Syphilis	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..
Thrush or aphthæ	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..
Varicella	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Total second quarter	17	27	12	919	61	37	42	45	19	32	35	10	32	16	12	20	42	36	30	37	43	59	89	82	95	89	29	13	29	45	24
3*d Quarter.* July, August, September.																													
Cholera	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
" infantum	2	26	8	555	1	1	35	31	18	22	19	12	38	18	8	18	16	24	13	9	33	18	37	20	48	36	14	17	10	21	14
" morbus	..	..	1	9	4	1	..	..	..	..	2	1	1	..	..	..	1	..	..	1	3	..	..	..	3	1	..	..	..	..	..
Diarrhœa	15	4	3	82	19	11	5	5	4	5	3	3	7	2	..	5	2	2	1	1	4	4	6	9	9	3	3	4	3	16	3
Diphtheria	..	11	2	142	3	3	12	3	4	6	5	4	8	2	3	3	3	8	11	6	8	11	11	1	8	16	2	..	3	4	4
Dysentery	6	4	8	76	18	10	4	6	2	1	3	3	2	5	5	2	3	2	2	2	4	4	7	5	10	2	3	3	2	10	4
Erysipelas	..	..	..	12	2	..	3	1	..	..	..	..	..	..	..	..	..	1	..	2	..	1	..	..	..	3	1	1	..	1	..
Fever	..	..	..	1	2	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
" bilious	..	..	..	2	3	..	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	1	..	..
" congestive	..	1	..	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" intermittent	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" nervous	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	1	..
" remittent	..	3	..	11	1	..	4	1	..	..	1	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..	1	..	..	3	..
" scarlet	..	3	5	253	3	4	9	8	1	7	2	1	21	5	4	2	13	5	4	4	11	17	38	21	24	27	9	2	11	6	3
" typhoid or enteric	1	3	2	57	20	1	6	6	1	3	2	1	4	3	2	1	..	..	2	3	2	2	4	3	11	5	3	4	5	1	2
" typhus	..	..	..	6	2	..	..	..	1	..	1	..	..	..	..	..	..	1	..	..	2	..	..	..	2	..	1	..	..	..	..
Hooping-cough	..	3	..	28	..	..	1	4	..	5	..	..	4	..	..	..	1	..	1	..	2	1	1	1	3	2	..	..	1	1	..
Measles	..	..	..	24	..	..	..	..	..	1	..	..	2	..	..	..	2	1	..	..	3	..	1	1	9	1	2	..	..	..	1
Smallpox	..	6	3	142	9	5	9	28	13	11	5	2	2	3	..	3	7	..	4	5	1	4	14	9	12	6	4	1	2	..	8
Syphilis	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..
Thrush or aphthæ	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Total third quarter	25	64	32	1409	87	37	93	93	44	61	43	27	90	38	22	35	50	44	41	34	75	63	119	70	139	102	43	32	39	65	39

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 2. *Showing Location, Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																						UNKNOWN WARDS.
				United States.	Foreign.	Unknown	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
CLASS I.—ZYMOTICS, &c.—continued.																													
4th Quarter. October, November, December.																													
Cholera infantum	..	..	2	20	..	..	..	2	1	3	..	..	1	1	..	..	..	..	..	..	2	..	..	1	2	2	..	..	1	2	..
Diarrhœa	5	1	2	20	9	7	4	..	1	..	..	..	2	..	1	..	2	1	1	..	2	1	2	6	2	1	..	..	..	7	1
Diphtheria	..	2	4	100	2	2	14	4	3	2	3	1	1	..	3	8	7	3	9	8	3	2	4	5	5	5	1	2	3	3	1
Dysentery	1	2	1	13	7	2	1	..	1	1	2	..	2	1	..	1	1	..	..	1	..	..	1	2	3	..	..	..	2	2	..
Erysipelas	..	..	..	6	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	2	..	1	..	..	..	..	..	..
Fever	..	..	..	2	1	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
" bilious	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
" congestive	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" camp	..	..	1	2	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
" nervous	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1
" remittent	..	..	2	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
" scarlet	..	1	3	191	6	1	10	3	5	2	7	6	2	1	7	7	5	3	3	7	33	4	11	14	23	12	2	4	5	16	3
" typhoid or enteric	1	2	7	61	20	7	3	4	..	3	1	1	4	3	5	1	4	2	2	3	5	4	8	3	9	5	2	..	4	5	..
" typhus	..	..	2	7	4	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	1	1	..	..	2	1	..	..	1	..	..
Hooping-cough	..	1	2	37	..	1	5	1	..	1	2	..	2	..	..	..	4	1	1	..	3	3	4	2	3	2	1	..	1	..	..
Measles	..	..	..	8	..	1	..	..	..	..	..	..	3	1	..	1	1	1	..	..	1	..	..	..	..	..	1	..	..	..	..
Smallpox	..	4	..	103	8	6	7	29	5	11	6	1	1	1	1	..	7	..	1	1	2	8	11	11	4	2	3	..	1	..	4
Syphilis	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Total fourth quarter	7	13	26	573	59	31	46	44	16	23	21	10	18	9	17	20	32	11	17	21	53	24	45	44	54	31	10	6	19	36	10
Total annual mortality from epidemics	64	131	84	3679	255	130	247	237	99	171	120	58	184	71	66	101	151	125	109	110	203	183	338	233	347	270	108	58	114	178	99
CLASS II.—UNCERTAIN OR GENERAL SEAT SPORADIC DISEASES.																															
Abscess	1	2	3	38	6	3	4	3	2	2	1	1	4	..	2	1	1	1	3	1	1	1	..	3	..	4	3	..	3	2	1
Anthrax	1	..	..	4	1	1	1	1	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1	..
Anæmia	..	..	..	16	2	..	..	2	..	2	1	..	2	..	..	..	1	..	1	..	1	..	..	3	1	1	1	..	1	1	..
Cancer or scirrhus	3	..	2	38	27	4	4	3	1	3	1	1	4	3	1	4	4	2	3	2	3	5	3	3	2	2	1	1	2	6	3
" of breast	1	..	..	4	4	1	1	..	..	..	..	..	..	..	..	1	1	1	..	..	..	1	..	..	1	..	..	..	..	..	2	1
Cramp	..	..	..	13	3	..	..	1	..	1	..	..	..	..	1	..	1	2	1	2	1	..	1	4	..	..	..	..	..	..	1
Cyanosis	2	2	1	62	1	1	10	2	2	..	3	..	3	4	2	3	..	..	1	5	3	..	2	2	2	2	1	3	6	5	2
Debility	41	63	5	575	175	76	52	40	21	39	36	25	35	26	26	27	21	14	19	27	47	22	51	36	57	40	19	15	9	70	47
Disease of throat	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Dropsy	7	25	10	178	92	14	24	13	4	13	12	2	14	9	6	7	9	7	10	5	12	13	13	8	22	18	10	3	11	19	10
Gangrene	5	..	1	32	9	5	4	..	1	4	..	1	..	2	..	1	1	1	..	..	3	5	2	2	4	5	..	1	1	7	..
Gout	..	..	..	5	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..
Hectic fever	1	4	1	48	21	3	2	5	1	4	6	1	5	6	1	1	6	1	1	3	4	4	2	7	2	1	1	1	2	4	..
Hemorrhage																															

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 2. *Showing Location, Colour, Nativity, and Wards.*

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 2. *Showing Location, Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY. United States.	NATIVITY. Foreign.	NATIVITY. Unknown.	WARDS. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	UNKNOWN WARDS.
CLASS II.—UNCERTAIN OR GENERAL SEAT, SPORADIC DISEASES—continued.																															
Inflammation	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
" of throat	..	..	..	3	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
" of leg	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" of tonsils	..	..	..	3	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Inanition	13	3	3	111	7	6	9	10	3	9	2	2	2	1	1	11	1	2	3	3	2	5	1	4	13	7	3	5	..	18	4
Marasmus	41	36	3	485	16	32	22	24	16	18	18	15	28	11	13	10	12	12	17	17	29	22	33	26	52	30	15	12	12	54	12
Malformation	..	..	..	17	..	..	4	..	..	1	..	..	1	..	1	1	..	1	2	..	..	..	..	1	2	1	1	..	1	..	..
Scrofula	7	12	2	63	6	7	4	5	4	3	3	2	2	1	1	4	6	1	..	6	1	3	4	3	5	5	..	1	2	7	1
Sore throat	..	..	..	6	2	..	1	1	..	1	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	1	1	..
Tabes mesenterica	..	4	..	33	2	..	4	4	1	..	2	1	2	..	1	2	1	..	..	..	1	..	3	3	2	6	..	..	1	1	..
Tumours	..	..	1	13	9	1	3	..	..	..	1	3	..	1	1	1	1	..	..	1	1	1	1	1	1	1	..	1	1	2	..
Ulceration	..	..	..	1	1	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
" of throat	..	1	..	10	..	1	1	1	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	1	..	1	1	..	1	1	1
Total	123	152	33	1764	385	155	152	116	57	100	86	56	103	65	59	76	65	46	62	77	115	84	118	104	169	125	55	43	54	201	83
CLASS III.—NERVOUS SYSTEM.																															
Apoplexy	10	6	6	86	59	17	9	9	8	9	6	4	8	7	5	9	5	5	2	4	5	3	3	6	5	10	2	3	3	20	6
Congestion of the brain	12	18	4	225	36	14	28	16	8	19	12	6	10	12	8	6	6	2	9	8	9	7	18	8	23	13	5	1	17	18	2
Compression "	..	..	..	2	2	..	..	..	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	1	..	..
Convulsions	11	27	6	600	23	13	32	33	16	32	20	15	25	14	11	13	24	21	17	13	44	31	47	26	68	47	11	11	19	29	11
Concussion of the brain	..	1	..	9	2	..	3	1	..	1	..	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	..
Coup de soleil	..	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Coma	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Disease of the brain	1	1	3	99	9	4	5	9	2	2	6	2	4	3	3	6	3	2	7	4	17	6	1	3	3	14	..	..	..	5	2
Dropsy "	1	9	5	213	3	6	10	10	12	9	7	7	3	2	7	7	9	9	9	4	16	7	11	11	20	14	3	7	5	13	5
Effusion "	5	5	3	67	1	5	5	1	4	2	2	3	8	1	6	5	..	4	1	6	3	1	1	2	1	5	2	1	..	4	2
Epilepsy	5	1	..	10	7	5	2	..	1	1	..	..	1	1	..	..	..	..	..	..	3	2	..	1	..	1	..	1	..	8	..
Fever of the brain	..	..	1	7	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	..	1	1	..	1	..	..	..	..
Hydrophobia	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Inflammation of the brain	1	8	4	278	22	5	30	16	10	16	5	6	12	8	8	11	14	7	5	12	17	12	19	17	26	13	5	6	3	13	10
Mania	1	..	..	6	2	3	..	..	..	..	..	..	1	..	..	..	1	..	2	..	1	..	..	..	..	..	..	..	1	4	1
Mania à potu	4	..	1	12	10	10	4	2	2	1	..	2	..	1	..	..	..	..	1	2	1	..	1	1	..	..	..	..	1	8	4
Neuralgia	..	..	..	2	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..
Palsy	8	12	7	97	48	14	2	8	3	4	8	..	7	7	8	9	1	6	10	6	12	5	9	1	5	8	2	2	13	13	3
Softening of the brain	2	..	..	20	7	2	2	1	3	2	3	..	..	2	1	2	..	..	2	1	..	2	1	..	2	1	..	1	1	2	3	..
Tetanus	8	..	1	19	2	5	3	..	1	..	1	..	1	1	..	1	..	3	..	1	1	..	1	..	3	..	..	..	..	9	..
Total	69	88	41	1754	236	104	137	106	72	98	70	47	80	59	59	68	67	56	66	63	130	74	115	78	153	129	33	3	67	147	46

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 2. *Showing Location, Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																				UNKNOWN WARDS.
				United States.	Foreign.	Unknown.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
CLASS IV.—DISEASES OF RESPIRATORY SYSTEM.																											
Asthma	3	1	..	7	6	4	1	..	..	2	..	1	2	..	..	..	1	1	..	..	..	1	1	..	2	..	..	..	..	4	1
Congestion of the lungs	6	2	3	84	21	5	3	7	2	8	6	2	5	2	1	2	7	3	..	2	3	..	8	4	8	15	1	..	3	11	4
Consumption of the lungs	154	139	28	1008	613	196	95	101	51	104	71	29	124	78	46	52	38	41	54	59	83	48	89	56	125	84	28	33	38	224	38
Croup	..	8	5	298	3	3	15	8	11	16	10	4	12	6	4	8	8	4	8	13	25	18	18	9	27	14	19	7	19	11	5
Disease of the lungs	..	1	2	18	5	..	4	1	..	1	1	..	1	1	..	..	..	1	2	1	3	..	1	..	1	2	1	..	..	..	..
Effusion of the chest	..	..	..	3	1	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Emphysema of the lungs	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Dropsy of the chest	3	1	3	51	10	2	2	7	3	..	2	3	1	4	..	2	3	1	4	3	4	6	1	..	1	4	..	1	4	4	..
Hemorrhage of the lungs	1	2	3	18	4	3	..	1	1	..	1	1	2	1	1	1	..	..	1	2	..	..	2	..	2	..	..	2	1	3	
Inflammation of the bronchi	6	17	2	111	18	9	13	6	7	14	6	2	9	5	2	4	2	1	1	8	13	4	7	3	3	7	2	3	2	7	5
" " chest	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..
" " larynx	..	1	1	23	1	..	2	2	..	..	..	1	3	2	..	2	1	..	2	..	2	1	1	1	..	2	..	1	..	..	..
" " lungs	15	53	21	567	85	29	45	25	22	37	22	18	43	13	24	16	15	17	18	16	35	21	25	23	52	35	20	14	41	47	16
" " pleura	4	1	..	7	8	6	1	..	2	1	1	..	3	1	2	..	..	1	..	..	..	..	1	..	..	3	..	..	..	5	..
Total	189	225	68	2200	775	257	181	158	100	183	121	61	205	113	80	88	77	70	89	103	170	99	155	98	219	168	71	60	109	314	72
CLASS V.—ORGANS OF CIRCULATION.																															
Aneurism	1	1	1	5	3	1	..	..	..	..	1	1	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	1	2	..
Disease of the heart	12	14	11	169	78	18	12	11	5	11	5	5	19	20	12	12	10	4	10	8	12	7	6	8	13	14	6	7	8	20	9
Dropsy	1	2	1	20	10	2	..	1	..	2	1	..	1	2	..	2	..	2	3	1	1	..	2	..	4	1	1	3	3	..	1
Enlargement "	..	1	..	7	4	1	..	..	..	1	1	..	1	..	1	1	..	..	1	..	1	..	..	..	..	..	1	1	1	2	..
Inflammation "	1	2	..	13	9	1	1	2	..	2	2	..	1	1	1	1	..	1	..	1	1	..	..	..	3	3	..	2	..	1	..
Ossification "	..	1	..	4	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..
Pyohæmia	5	..	..	7	9	4	1	1	..	1	..	1	1	1	1	1	..	..	..	..	..	..	..	..	1	2	1	..	1	7	..
Rupture of the heart	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Syncope	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	20	21	13	227	113	28	15	16	5	16	12	6	23	24	16	19	12	7	14	10	16	7	8	8	22	20	9	13	15	32	10
CLASS VI.—DISEASES OF THE DIGESTIVE ORGANS.																															
Consumption of the stomach and bowels	..	1	..	8	6	1	..	..	..	2	..	..	..	..	1	..	..	..	..	..	1	3	1	1	2	..	..	1	1	1	1
Cancer of the stomach	4	2	1	32	27	5	5	2	1	3	5	4	5	5	1	1	1	..	2	3	3	1	3	1	3	4	..	1	3	4	2
" spleen	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
" liver	..	..	..	6	3	..	..	..	1	1	1	..	2	2	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..
" rectum	..	..	..	1	3	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Cirrhosis	4	..	..	8	8	5	1	..	..	4	..	1	..	1	2	1	..	..	1	1	..	..	..	..	..	1	..	..	2	5	1
Constipation	..	..	..	2	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 2. *Showing Location, Colour, Nativity, and Wards.*

TABLE V.—*Classified Mortality for the year* 1861—Continued.
Division 2. *Showing Location, Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																								UNKNOWN WARDS.
				United States.	Foreign.	Unknown.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
CLASS VI.—DIGESTIVE ORGANS—continued.																															
Colic	..	..	1	5	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	..	..	..	1	..	1
Congestion of the bowels	..	..	..	3	2	..	2	..	..	..	1	..	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..
" " liver	..	..	..	10	2	..	..	2	..	..	..	..	1	..	..	1	1	..	..	..	1	..	..	2	2	1	..	..	1	..
Disease of the liver	..	..	1	32	13	..	4	3	..	1	1	..	1	2	2	2	..	..	1	1	3	3	3	1	5	5	3	..	2	1	..
" " stomach and bowels	..	..	1	14	3	..	..	..	..	2	2	..	..	1	1	..	..	..	1	..	2	1	..	..	1	..	..	..	3	1	1
Dropsy of the abdomen	2	1	..	3	3	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	3	..	1	..	..	..	..	2	..
Dyspepsia	..	..	..	6	2	..	1	1	..	..	..	..	3	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..
Enlargement of the liver	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..
Hemorrhage of the stomach and bowels	..	..	..	10	2	..	..	1	..	..	1	1	..	2	..	..	..	..	2	..	..	..	..	1	..	1	..	..	1	1	1
Hernia	..	..	1	5	8	1	..	..	..	1	..	1	3	..	..	..	1	..	..	1	..	1	..	..	1	2	..	1	..	..	..
Inflammation of the stomach and bowels	9	7	5	168	58	12	18	15	7	11	5	5	11	2	7	7	11	6	4	8	13	8	18	8	19	5	15	4	7	15	4
" " peritoneum	5	2	3	36	25	6	4	5	3	3	3	..	1	..	6	1	..	3	1	2	2	2	2	3	7	3	2	..	1	2	1
" " liver	1	1	..	19	20	1	2	2	..	2	1	1	4	5	1	3	..	1	1	2	1	2	1	1	7	1	3	2	2	1	..
Ileus	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..
Intussusception	..	..	..	7	1	..	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	1	..	..	1	..	1	1	..	1	..
Jaundice	2	1	2	16	5	3	..	1	1	..	..	1	3	2	1	..	1	1	..	..	3	..	1	1	1	..	..	3	3	..
Obstruction of the bowels	..	..	..	5	2	..	1	..	..	..	..	..	2	1	..	..	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..
Stricture of the œsophagus	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Teething	..	..	..	30	..	..	1	1	..	2	1	1	1	..	..	..	..	..	..	1	4	..	2	3	7	1	1	1	..	2	1
Ulceration of the stomach and bowels	..	1	1	12	5	1	..	2	2	1	2	..	2	..	1	..	..	..	1	2	1	1	..	..	..	2	..	..	..	..	..
Worms	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	..	..	..
Total	27	16	16	446	203	37	40	35	16	35	24	15	37	26	25	18	16	12	15	26	35	28	36	22	55	26	28	11	27	48	14
CLASS VII.—DISEASES OF THE URINARY SYSTEM.																															
Albuminuria	..	1	1	14	5	1	..	2	..	1	..	2	1	3	1	2	..	..	1	1	1	..	..	1	1	2	..	..	..	..	..
Cancer of the bladder	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
" testicles	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Diabetes	3	..	..	5	5	2	..	1	1	..	..	..	1	1	..	2	..	..	1	..	..	..	..	..	..	..	..	..	1	3	..
Disease of the kidneys	3	2	..	16	8	5	..	3	..	2	..	..	3	1	2	1	..	1	..	2	..	2	1	1	..	1	1	1	1	6	..
" " bladder	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
" " prostate gland	..	..	..	..	2	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Inflammation of the kidneys	..	..	..	6	2	..	1	1	..	..	1	..	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	..	1	..
" " bladder	3	4	..	12	13	3	2	1	3	1	4	..	2	..	..	1	1	..	2	..	1	1	..	..	2	1	..	1	1	4	..
" " prostate gland	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stone in bladder	..	..	..	..	2	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Uræmia	..	..	..	1	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	10	7	3	57	38	14	4	8	4	4	5	2	10	8	3	8	1	1	4	3	3	4	2	2	3	4	2	3	3	14	1

TABLE V.—*Classified Mortality for the year* 1861—Continued.

Division 2. *Showing Location, Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY.			WARDS.																						UNKNOWN WARDS.
				United States.	Foreign.	Unknown.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
CLASS VIII.—DISEASES OF THE ORGANS OF GENERATION.																													
Cancer of the uterus	1	2	..	17	12	1	2	1	2	1	1	1	3	1	..	1	1	2	2	2	2	..	1	..	1	3	..	..	1	2	..
Disease of the ovaries	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
" " uterus	..	..	..	2	1	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Dropsy of the ovaries	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Hemorrhage of the uterus	..	1	..	6	7	..	1	..	..	..	1	1	1	1	..	..	1	..	..	1	1	..	..	..	..	2	2	..	1	..	..
Inflammation " "	..	..	1	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	..	..	..	..
" " ovaries	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Puerperal fever	..	..	1	7	5	3	2	1	..	..	..	1	1	..	..	..	..	..	..	1	..	2	..	1	3	..	1	..	..	..	1
" convulsions	2	2	..	15	8	2	1	2	1	..	..	..	3	..	1	2	..	..	1	1	2	..	..	2	3	1	..	2	..	3	..
Rupture of uterus	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	3	5	2	53	36	6	6	6	3	1	2	3	8	2	2	4	2	2	4	5	6	4	1	3	7	7	4	3	2	5	1
CLASS IX.—DISEASES OF THE ORGANS OF LOCOMOTION.																													
Caries	..	..	..	1	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
" of the spine	..	..	..	3	..	..	..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	2	..
Concussion of the spine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..
Coxalgia	..	..	..	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..
Disease of the pelvis	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	..	..	1	..	2	..	..
" " spine	1	2	..	8	2	1	..	2	..	1	..	..	2	..	..	..	..	..	..	..	1	1	..	1	..	..	1	..	2	..	..
Effusion on spinal marrow	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fracture of spine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Inflammation of the spine	..	1	..	6	2	..	..	2	..	..	..	1	..	1	..	1	..	1	1	..	..	..	..	..	..	..	..	..	1	..	..
Rheumatism	2	1	4	18	3	1	2	1	..	..	..	..	..	..	1	1	2	2	1	..	2	..	..	3	..	..	1	..	3	..	..
Total	3	4	4	43	10	3	2	5	1	2	1	1	3	2	1	3	2	3	3	..	4	1	1	1	4	..	1	2	3	5	1
CLASS X.—DISEASES OF THE INTEGUMENTARY SYSTEM.																													
Cancer of the skin	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Eczema	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Pemphigus	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Purpura	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Rupia	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Total	..	..	..	5	1	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1	1	..	..	1	..	..

TABLE V.—*Classified Mortality for the year* 1861—Concluded.
Division 2. *Showing Location, Colour, Nativity, and Wards.*

DISEASES.	ALMSHOUSE.	PEOPLE OF COLOUR.	COUNTRY.	NATIVITY. United States.	Foreign.	Unknown.	WARDS. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	33	24	UNKNOWN WARDS.
CLASS XI.—OLD AGE	2	13	6	95	97	11	10	11	10	12	8	4	8	13	12	7	6	7	6	8	8	5	2	15	10	8	2	3	9	9	4
CLASS XII.—EXTERNAL CAUSES.																															
Asphyxia	1	..	..	47	..	..	6	5	1	2	3	1	4	2	1	1	1	..	..	3	2	1	1	2	2	2	1	1	2	3	..
Burns and scalds	..	1	3	70	10	1	2	4	3	10	2	3	4	7	1	..	1	2	4	1	4	4	3	2	8	2	1	3	4	3	..
Casualties	1	2	4	70	46	6	8	11	2	3	3	3	8	3	1	2	4	4	1	4	9	2	4	1	11	13	4	2	6	5	4
Drowned	..	1	5	45	30	24	6	3	3	6	1	4	2	6	2	4	3	1	1	..	4	1	2	3	6	..	5	1	1	2	27
Debauch	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Exposure and want	2	..	..	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1
Fracture	1	1	..	13	6	3	1	1	1	1	..	..	1	1	..	..	1	..	1	1	2	..	..	1	2	2	..	1	..	3	2
Intemperance	..	1	..	3	10	16	2	1	..	4	1	..	..	..	..	..	1	..	..	..	2	..	1	..	1	..	..	1	..	..	15
Neglect	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Poisoning	..	..	..	4	3	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1	..	2	..	1	..	..	..	..	1	..
Suicide	..	..	..	12	13	6	1	1	..	..	1	..	1	..	4	1	2	..	1	..	3	1	1	..	1	2	1	1	3	2	4
Suspension by the neck	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Strangulation	..	..	..	2	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Suffocation	..	..	..	5	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..
Violence	..	1	1	4	6	3	1	1	..	2	..	..	1	..	..	..	2	1	..	..	..	..	..	..	..	..	1	1	..	..	2
Wounds	..	..	1	..	3	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	1
" gunshot	..	..	6	15	3	3	2	2	..	..	..	..	1	1	..	..	1	..	..	1	1	..	..	..	2	..	..	1	2	1	..
Total	5	7	20	293	130	67	30	30	30	28	11	11	22	21	10	9	18	8	8	10	30	10	14	9	36	21	14	12	18	24	56
CLASS XIII.—UNKNOWN	26	6	5	60	13	31	2	4	1	2	3	2	6	5	2	2	2	1	2	..	2	2	7	1	8	2	3	..	5	31	4
CLASS XIV.—STILLBORN	..	39	3	629	..	1	45	23	22	28	24	19	43	16	18	17	33	23	15	13	43	29	30	20	49	30	4	8	7	14	54

ART. X.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1861. *Sept.* 25. *Rupture of the Liver.*—Dr. LIVEZEY presented a specimen of this lesion, and read the following history of the case:—

Martin Weller, a German, aged 30 years, whilst driving a heavily loaded beer wagon, was thrown from the seat and run over, the wheels passing over his abdomen. The accident happened about 8 A. M., on Wednesday, Sept. 18, and he was admitted into the Pennsylvania Hospital about two hours and a half afterwards.

His pulse was exceedingly small, feeble, and frequent, his skin cold and clammy, his intelligence perfectly clear, and his pupils somewhat contracted. He pointed to the right hypochondrium as the region of the greatest pain. The abdomen was large but not tympanitic. He complained of being exceedingly uncomfortable, but did not at first appear to be particularly so when on his back or left side. Towards evening he assumed a position on his right side, and then expressed himself as unable to rest in any other. In fact the mere effort to change his position produced the most intense agony. Whiskey and laudanum were administered, and he reacted somewhat, shortly after his admission.

The next day he was much feebler; his pupils were still contracted, and the clamminess of skin had increased, as well as the pain in his abdomen. During the night his mind had wandered, but during the day it was perfectly clear. He was evidently sinking from internal hemorrhage, and it was surmised that he had sustained a rupture of the liver. He never had any difficulty in voiding his urine, which seemed normal.

He died the next morning (the 20th), at 10 o'clock.

Autopsy, ten hours after death.—Not much rigor mortis. Abdomen large and dull; on puncturing it, about three quarts of bloody fluid escaped. The peritoneum was found red, and roughened by recent exudation.

There was considerable distension of the intestines by gas. The liver was large, its upper surface being on a line with the nipple. Near the suspensory ligament, on the right side, there was found a very extensive laceration extending from in front of the ligament, backwards and over to the left, under the ligament to the posterior surface; this laceration was zigzag in shape, about three inches long, and penetrated deeply into the substance of the liver.

The kidneys were both somewhat enlarged, with considerable evidence of fatty degeneration; all the other viscera of the abdomen, as well as those of the thorax, were healthy.

In this case the examination revealed the cause of his assuming the position on his right side; showing that when in any other, the suspensory ligament being put upon the stretch, the tendency was to separate the edges of the wound, and thus, after inflammation had been set up, to give rise to the most intense pain.

Compound Fracture of Humerus; Death (probably) from Pyemia.—The following paper, communicated by Dr. JOHN ASHHURST, Jr., was then read:—

George D——, aged 14 years, was admitted to the Pennsylvania Hospi-

tal on the 29th of July, 1861, suffering from a compound fracture of the right humerus. The fracture was oblique, the upper fragment projecting anteriorly; there were two lacerated wounds, one anterior and superior, communicating with the seat of fracture, the other smaller and affecting the soft parts only. The patient presented the evidences of a feeble constitution, being somewhat pale and anemic, and unable to endure any amount of fatigue, his face flushing quickly with any excitement. His previous history as far as it could be ascertained was that about three years before the accident he had had an attack of measles, and a month or more before the accident had suffered from chronic diarrhœa and great debility. Diuresis was also very frequent, his water having sometimes to be passed every half hour.

The treatment of the fracture was conducted according to the usual methods, and for three or four weeks the case seemed to progress as favourably as could be expected in view of the constitutional complications. Tonics and stimulants were given on account of the debility of the patient, but there were no symptoms to cause any anticipation of a disastrous result. After this time, however, the patient began to grow daily weaker and weaker. The amount of stimulus was increased, a wineglassful of milk punch and the same quantity of strong beef essence being given every alternate hour; while the wound, which had assumed the flabby appearance of an indolent ulcer, was dressed with stimulating washes. On the first of September, I made an examination of his urine, hoping to obtain some light on his true pathological condition (a step which I would have taken before had I been aware of his frequent diuresis). There was an enormous deposit from his urine, which at first appeared to be pus, but upon microscopic examination proved to consist of the soluble phosphates in large amount.

To prevent this constant drain upon the system, and to relieve also the chronic diarrhœa from which he still suffered, a combination of aromatic sulphuric acid and laudanum was administered, with the effect of checking the intestinal disorder, though not of altering essentially the nature of the urine. He, however, continued to grow feebler day by day; his pulse small, compressible and very rapid, 120 or 130 in the minute, and his skin presenting that peculiar hue which has been likened to a "cold buckwheat cake." Nervous twitchings about the mouth, and subsultus tendinum during sleep, also gave evidence of his low condition. A large amount of unhealthy pus began now to be daily discharged from the wound, and evidently found its origin in the neighbourhood of the axilla.

Up to this time there had been no marked suffering, the patient complaining merely of weakness. On the morning of Monday, Sept. 9th, while I was dressing his arm, his face suddenly changed, becoming almost hippocratic; but the immediate administration of stimulus revived him, and during the day he appeared no worse than usual. On my evening visit to the ward, however, there was marked subsultus and picking at the bedclothes, and the hippocratic face in all its ghastly features. At 11 P. M., I observed symptoms of dyspnœa, and for the first time the patient complained of discomfort; he was evidently moribund, and expired about twenty minutes after four on the morning of Tuesday, 10th September.

Autopsy, twelve hours after death.—There was but slight rigor mortis; there was some swelling of the feet, but no true œdema. The kidneys were found much congested, and with several points of what seemed to be commencing suppuration.

The stomach and small intestine were covered on their internal surfaces with sheets of mucus, giving in the stomach the appearance of a pseudo-membranous deposit. The stomach was pale and flabby, but the intestine hyperæmic. The pancreas was exceedingly dense and hard. The spleen was somewhat softened and the mesenteric glands considerably enlarged and discoloured. The liver presented no abnormal appearances.

In the thorax the pulmonary and costal pleuræ on the left side were found extensively adherent. The lungs were infiltrated and congested, giving in some parts the appearance of pulmonary apoplexy, and in others that of the peculiar condition known as atelectasis pulmonum.

There were patches of congestion in the lungs, with a central puriform deposit.

There was considerable effusion into the cavity of the pericardium, and the heart itself was enlarged and flabby. In the wall of the right ventricle, near the apex, beneath the endocardium, and in no way connected with the cavity of the ventricle, was a considerable deposit of puriform matter.

The blood throughout the body was watery. The fracture of the humerus was found to be entirely disunited, although pretty firm union had occurred during life; this may probably have happened from some violence in removing the body from the ward to the dead-house. The upper fragment on its external surface, was denuded of periosteum from the seat of injury to the head of the bone.[1]

A probe passed upwards from the wound penetrated without resistance, and was apparently first arrested by the acromion process of the scapula. On opening the shoulder-joint, a free gush of pus indicated the position of the abscess which had latterly discharged through the wound.

Virchow, in his *Lectures on Cellular Pathology* (page 203 of Dr. Chance's translation), says: "The same thing which we have hitherto considered in the veins, occurs also in the heart. In the right ventricle especially, we not unfrequently see what are called purulent cysts between the trabeculæ of its walls. They project into the cavity like small rounded knots and from little pouches, which, when cut open, contain a soft pulp that may present a completely pus-like appearance.

"People have plagued themselves to an indefinite extent about these purulent cysts, and invented all possible theories to account for them, until at length the simple fact came out that their contents are frequently nothing more than a finely granular pulp of an albuminous substance which does not offer even the slightest resemblance in its more intimate structure to pus."

Dr. STOKES, on the other hand, in his work on Diseases of the Heart and Aorta (page 112), says: "Abscess of the walls of the head may be occasionally met with, but we must not confound a true phlegmonous abscess with the purulent deposits to which in common with other organs the heart is liable in cases of phlebitic disease."

Whether the deposit of puriform matter found in this case in the wall of the right ventricle, was the "albuminous substance" spoken of by Virchow, or whether it was really a "purulent deposit," such as Stokes mentions, I am not prepared to say.

[1] In preparing the humerus for the hospital museum, it was found that the head of the bone was completely detached from the shaft, and separated from it by an abscess filled with a fetid pus.

Abscess of the Liver.—Dr. C. C. LEE presented a specimen of this disease, with the following history:—

Chas. Myers, a German seaman, æt. 33, was admitted to the Penna. Hospital Sept. 14, 1861. He had made several voyages to South America and the East Indies, and escaped illness, although nearly all the crew were ill; during the last year, however, he had not been to sea, but had worked at ship-rigging along the wharves. Six months before admission to the hospital, he had been attacked with dysentery, which never entirely subsided; he had also occasional chills, followed by fever, but never exhibiting any regular periodicity. About the 1st of August, his feet became œdematous, and the anasarca gradually ascended, but was always greatest in the right leg. Two weeks later the abdomen swelled, simultaneously with which the patient had severe pain in the back, and difficult micturition. On admission he had orthopnœa, and constantly complained of pain in the epigastrium, extending into both hypochondriac regions. He had lost flesh since the beginning of the attack, and had incessant diarrhœa (never passing blood, according to his repeated assertion), but no vomiting. His urine was not albuminous, but showed dense deposit of phosphates with a few amorphous urates. He lingered in great debility for ten days, and died on the 23d September.

At an *autopsy* made seventeen hours after death, very little rigor mortis was found; upper extremities greatly emaciated, lower œdematous. Heart and lungs healthy. In the pericardium about ℥ij of serum were found; nearly a pint in left pleural cavity, and about three quarts in the abdomen.

The *liver* was enormously enlarged, and bound to the diaphragm by recent adhesions; while raising it in situ, the posterior wall of the right lobe was perforated by the finger, when the immediate escape of a large quantity of thin greenish pus showed the existence of an abscess; in fact, the whole right lobe was excavated into one enormous abscess, which contained 2½ quarts of pus.

The stomach and other abdominal organs were healthy except the colon, the entire mucous surface of which was ulcerated to a marked degree. This explained the dysenteric symptoms, and was probably the cause of the hepatic abscess; in Dr. Budd's work on the Liver, as well as in that by Mr. Annesley, on the Diseases of India, numerous similar cases are given.

The whole length of the right iliac vein was found completely ensheathed by enlarged lymphatic glands, compressing its contents, and explaining the greater œdema observed in the right lower extremity.

Cancer of Œsophagus and Trachea.—Dr. LEE exhibited also a diseased œsophagus and trachea, with the following history:—

Margaret H., aged 55, was admitted to the medical ward of the Penna. Hospital, July 3, 1861. For several months she had experienced occasional attacks of dysphagia, but these were so rare that at first she paid little attention to the subject. About one month before her admission, however, this difficulty suddenly became greatly increased, and was attended by slight sore throat. In a few days a little dyspnœa also appeared, chiefly during and after eating. She consulted a physician, who detected no mechanical impediment in the throat, and treated her for laryngitis, but as she obtained no relief, she became alarmed and applied for admission to the hospital. When first examined, a firm resisting mass was distinctly felt, lying across and apparently embracing the trachea about ½ inch below the thyroid gland; it was very deep-seated, with ill-defined edges, but immovable.

Internally, no redness or swelling could be observed, even with the laryngoscope, but a stomach tube, when passed down the œsophagus, encountered an obstruction exactly corresponding with the external swelling. There was no enlargement of the axillary glands, but in the right mamma there existed a small, firm, movable tumour about the size of a split pea. The case was diagnosed as "constriction of the œsophagus," probably malignant, and was treated by mechanical dilatation and tonics; but the inability to swallow solid food and the dyspnœa gradually increased, and the patient died of suffocation, August 22, 1861.

An *autopsy*, made at the patient's house sixteen hours after death, revealed well-marked cancerous degeneration of the deep-seated glands of the neck, and a large scirrhous mass on the left of the trachea, just below the thyroid gland. This had apparently sprung from the wall of the œsophagus, into which it had ulcerated; its interior was filled with sanious cavities, communicating here and there with the trachea, exactly as described by Rokitansky, who says (vol. ii. p. 11), "cancerous degeneration generally affects the circumference of the œsophagus, and thus gives rise to annular stricture, the extent of which must correspond to the extent of the carcinomatous deposit . . . The metamorphosis of the morbid product frequently gives rise to large sanious cavities, the carcinomatous parietes of which are covered with fungoid granulations, and with which the trachea communicates above and below in a transverse or slanting direction." At two points in this case the cancer had ulcerated into the trachea, nearly closing it. Under the microscope, a section showed well-defined filiform and multiform cells; there were very few caudate, and no epithelial cells, the condensed nature of the tumour causing the multiform variety to predominate. Some of the large lymphatic glands in the vicinity were similarly affected, but all the glands of the mediastinum and the heart and lungs were healthy. No other lesions were detected.

Oct. 9. *Single Kidney.*—Dr. PACKARD exhibited a specimen of this abnormity, removed by him from the body of a patient who had died in the Military Hospital, of enteric fever. Nothing remarkable was observed in any other organ.

The left kidney, ureter, and supra-renal capsule were wholly wanting. On the right side, the kidney was at least twice the usual size, and the capsule rather larger than common. The former organ was somewhat rounded, and its hilus only slightly depressed.

The urinary bladder was perfectly symmetrical, but not the slightest trace of a ureter existed on the left side.

A somewhat similar instance is on record in the *Transactions of the Boston Society for Medical Improvement*, vol. iv. p. 11. It was observed by Dr. Thayer, of Keene, N. H., but differed from the present case in that a capsule existed, although there was no trace of the left kidney.

Cirrhosis of Liver; Hemorrhage from an Ulcer in the Œsophagus.—Dr. PACKARD also gave an account of an autopsy made by him a few days since, which presented features of marked analogy with a case reported to the society by Dr. Kane, in February last.

Dr. Kane's case was that of an Irishman æt. about 55, an old drinker; the subject of the present account was a lady æt. 73, of very abstemious habits. In the latter case, as in the former, ascites, hæmatemesis, melæna, and exhaustion were the chief ante-mortem phenomena.

An autopsy showed an immense deposit of subcutaneous fat, cirrhosis

of the liver, a fatty condition of that organ, of the heart, and probably of the pancreas, and atheroma of the aorta. A very large quantity of serum was effused into the peritoneal cavity.

The source of the blood vomited and discharged by stool was found to be, as in Dr. Kane's case, an ulcer seated near the gastric end of the œsophagus; the veins in the neighbourhood were dilated, and one of them at the ulcerated spot had given way.

Nov. 13. *Cancer of the Œsophagus.*—The Secretary presented this specimen for Dr. W. F. NORRIS, and read Dr. NORRIS's account of the case as follows:—

Lavinia Harnish, aged 45, was admitted into the Pennsylvania Hospital October 8th, 1861, for a tumour of the neck.

She stated that four months previously she first experienced some slight dysphagia, which continued steadily to increase, so that at the time of her admission swallowing was difficult, although not painful. About one month after she noticed this, she perceived a swelling in her neck, which has since gradually enlarged.

The swelling was situated on the front of the neck immediately below the thyroid cartilage, and extended downwards between two and three inches. It was hard to the touch, giving no pain when handled, and rising to a very slight extent in the effort to swallow. Her respiration was stridulous; she stated that this had come on suddenly four days previous to admission. In the four months during which she has been complaining, she has lost flesh rapidly, and is at present emaciated and sallow.

After admission into the hospital she rapidly sank, deglutition became more difficult, respiration more croupy and painful; and she died on the afternoon of the 12th, the fourth day after entrance.

An examination of the body was made 14 hours after death. The thoracic and abdominal viscera were all found to present a healthy aspect, except that there was some hypostatic congestion of the lungs. On removing the sternum a hard nodulated tumour, about three inches in length, consisting of indurated and enlarged lymphatic glands, was seen adhering to the manubrium. In the neck, a tumour was found extending from the thyroid body about three and a half inches downwards, chiefly on the left side, the portion on the right consisting mostly of enlarged glands. On opening the œsophagus from behind, a large indurated mass was seen, growing apparently from the submucous cellular tissue, which nearly filled up the calibre of the tube, leaving for the passage of food a space not more than the fourth of an inch in diameter. One inch below the cricoid cartilage the diseased tissue had ulcerated through into the trachea, which was reddened and inflamed from thence down to its bifurcation.

The disease involved none of the other tissues of the neck. A portion of the fluid pressed from the tumour, when examined by the microscope, showed numerous irregular, polynucleated, caudate cells.

Dr. Hewson stated that this patient had been under his care some years ago, when he was resident physician to the hospital. She applied to him last summer on account of the tumour, which grew smaller under the use of iodide of iron internally, and iodide of cadmium externally. He thought the opening into the trachea had occurred shortly before her admission into the hospital.

Dr. Lee remarked, that at the autopsy a careful search was made for other deposits in the body, but none were found. He alluded to an

analogous case reported by him to the society in September, and quoted Rokitansky's statement that œsophageal cancer is apt to be unassociated.

Abscess of Prostate Gland.—Dr. LEE, in presenting this specimen, related its history as follows :—

Frederick Evans, æt. 33, was admitted to the surgical wards of the Pennsylvania Hospital on Oct. 17, 1861, with distressing prolapse of the rectum. This had existed ten days, coming on after a severe debauch; the patient was, indeed, an habitual drunkard, and, having no home, was often exposed all night in the street. For several days before the rectum came down he experienced some difficulty in urinating, but this greatly increased after the prolapsus occurred.

At the time of his admission his urine was dribbling away; as the bladder was much distended, the attending surgeon attempted to introduce a catheter, but failed, although it passed readily as far as the prostate gland. This attempt was made several times without success; he was given a warm bath and demulcent drinks, after which he passed a gill of urine, but with great effort and with burning pain in the perineum. The following day a catheter was easily introduced, and after this he passed his urine without assistance. No contraction of the sphincter ani existed, and the rectum was returned without difficulty, but it constantly came down in spite of all the efforts made to retain it. This was complicated by a most exhausting diarrhœa, which no astringents seemed able to control. From the first the patient was stimulated freely, but it was with difficulty that an attack of delirium tremens was averted. He had frequent rigors, and his diarrhœa and general exhaustion increased daily; he gradually sank, and died on Oct. 28, eleven days after his admission to the hospital.

Autopsy, fourteen hours after death.—The thoracic viscera were found healthy; the brain was not examined. The liver was enlarged and fatty, as in the first stage of cirrhosis; kidneys enlarged and congested, but not otherwise diseased. The bladder and urethra were dissected out entire, and an examination proved that there was no stricture, but showed the existence of a large abscess involving both lobes of the prostate; this had apparently in its forming stage constituted the obstruction to the introduction of the catheter. The bladder was healthy, and the only other lesion was an ulcerated state of the large intestines, which extended from the head of the colon to the anus. The rectum was almost denuded of its mucous membrane, and was raw and irritable in the highest degree.

Nov. 27. Cystic Formations in the Lungs.—Dr. PACKARD presented a specimen of this character, removed by him from the body of a maiden lady, æt. 42. Death had occurred after several days of violent delirium; symptoms of gangrene of the lung had also shown themselves.

The cysts were of various sizes, larger and more numerous in the left than in the right lung. Each one was lined by a perfectly smooth membrane, and had a distinct wall. The left pleura was universally adherent, more strongly at its upper part; the whole lung was carnified, and a large portion near its middle was in a state of incipient gangrene. The right lung was adherent at its upper part, which contained a few small cysts. The cysts were wholly unlike the old healed tuberculous cavities sometimes seen in the lungs.

Other lesions were observed in the body, interesting from their resemblance to those presented in chronic alcoholism, this lady having been for

years in the habit of using sulphuric ether freely as an anodyne. The brain was much congested throughout, and the septum lucidum was very much softened. A good deal of serum had been effused in the subarachnoid space, and some lymph deposited in the outer layer of the arachnoid membrane.

The heart was fatty, and the aorta extensively atheromatous; all the valves were healthy.

The liver was very fatty, and tilted so that its right lobe extended downwards. The kidneys were much congested; the supra-renal capsules healthy. No other disease was observed.

Dec. 11. *Luxation with Fracture of Sixth Cervical Vertebra.*—Dr. ASHHURST exhibited this specimen, the history of which was as follows:—

Patrick T——, a young, healthy, and very well developed man, was admitted into the Pennsylvania Hospital on the afternoon of Friday, December 6th, 1861.

While engaged in loading a vessel, he had been struck upon the back of the neck by a sack of salt, weighing about 200 lbs. The sack forced his head down upon his breast, and then fell over in front of him. When admitted into the house, he was completely paralyzed as to both sensation and motion, below the nipple on either side. His right arm was almost powerless, and the motions of the left arm much impaired. The head was bent to the right side, but motion of the neck was attended by no more pain than would naturally arise from the contusion produced by such an accident. His bladder was of course paralyzed, and his water had to be drawn off by means of a catheter at proper intervals. During the ensuing night and day he suffered no pain, but his thirst was excessive, and his skin became very hot, giving to the hand the sensation known as "calor mordicans." On Saturday evening he was seized with dyspnœa, which was at first accompanied with pain about the epigastrium. This, however, shortly disappeared. From time to time there was regurgitated into his throat a dark, grumous fluid, which he had some difficulty in evacuating from his mouth.

The dyspnœa now gradually increased, until the afternoon of Sunday, the 8th inst., when death put an end to his suffering. An autopsy was made seven hours later, with the following results: There was a very large clot effused among the dorsal muscles on the left side. An almost complete separation existed between the sixth and seventh cervical vertebræ, the intervertebral substance with some spiculæ from the sixth, adhering to the seventh vertebra.

There was a good deal of laceration of the ligaments, and investing muscular tissue, and some bloody effusion both within and without the vertebral canal. The spinal cord itself was not divided.

This was an obscure case, for although the rational signs of fracture or dislocation were present, there was no inequality in the spinous processes such as usually indicates a fracture, nor was there the immobility almost universally accompanying a luxation.

1862. *Jan.* 8. *Rupture of the Lung, without Fracture or Wound of Thoracic Walls.*—Dr. LEE presented this specimen, and gave its history as follows:—

John Bradley, a strong, healthy lad, æt. 18, was admitted to the Pennsylvania Hospital late on the evening of Jan. 4th, 1862. About five hours before, while driving a wagon heavily laden with grain, he had fallen

under it, and two wheels had passed obliquely over his left shoulder and chest. He stated that at first he felt but little pain, and was able to rise and run some twenty or thirty yards after his horses.

While running he suddenly became faint and fell in the road, after which he remembered nothing until he was brought to the hospital.

When admitted, he was cold and collapsed, groaning, and occasionally shrieking with pain, which he referred to the epigastric region and the left side of the chest. The left arm was powerless, and painful when moved; his pulse was 120 and tolerably full, his respiration frequent, gasping, and always causing an increase of the pain. There was great tenderness about the chest and the upper part of the abdomen, and frequent vomiting of small quantities of blood; this, though dark, was *rather frothy*, and was not coagulated. A careful examination revealed no fracture of the ribs or shoulder; no external lesion, indeed, beyond contusion in the track of the wheels. The hurried and painful respiration suggested injury to the diaphragm, but this point could not be then decided. Auscultation showed puerile respiration on the right side, while on the left, respiration was inaudible above the sixth rib, and below that point hydro-pneumothorax evidently existed, for at every inspiration the air could be heard rushing from the lung into liquid which was apparently collected in large amount.

Percussion on the right side was normal; on the left it was remarkably resonant both in front and behind, above the sixth rib. Below this it was quite flat; partial or complete collapse of the lung was hence inferred.

The *treatment* consisted in the free administration of stimulants and anodynes, with heat to the extremities and hot fomentations to the chest until reaction was secured, and then slight diaphoretics were given. During the night, the patient became more quiet and rallied in strength, but the following day pneumonia supervened; under this complication he slowly sank, and died on the third day after admission.

Autopsy, six hours after death.—Rigor mortis well-marked; no external evidence of injury. On removing the sternum the right lung was found healthy on the surface, but had numerous recent pleuritic adhesions; anteriorly it was crepitant, but posteriorly, the pneumonia had advanced to the stage of red hepatization, a thin section sinking instantly in water. In the left pleural sac there was fully a quart of bloody serum, and the left lung was collapsed to scarcely half its natural size, mottled with large ecchymoses, with, here and there, a small patch of pulmonary emphysema. On carefully examining the fissure between the upper and lower lobes, a small rupture was detected, through which air was easily forced by means of a syringe introduced into the left bronchial tube. No fracture or lesion of any sort existed in the ribs or sternum, so that the case presented the very rare feature of rupture of the lung, from simple compression of the thoracic walls. The heart and all the abdominal viscera were quite healthy.

A few such cases are on record, but their extreme rarity makes them at once instructive and interesting. In the first vol. of the *Mém. de la Soc. de Chirurgie de Paris*, M. Gosselin relates two cases of ruptured lung from external violence without fracture of the ribs or external wound, both of which recovered. Again, in *Holmes' System of Surgery*, vol. ii. p. 386, Mr. Alfred Poland has collected the history of several analogous cases; and another case, in which, from sudden compression of the front of the chest, a rupture occurred at the bifurcation of the trachea, is to be found in Mr. Lonsdale's *Treatise on Fractures*, p. 239. The cause or causes of such lesions are very obscure. The following explanation, offered by M. Gosse-

lin, is, perhaps, the most probable: that at the moment of receiving the injury, the patient makes a sudden full inspiration which fills and distends the lungs, while the air, prevented from escaping by occlusion of the larynx, thus becomes pent up in the lung-tissue, and the lung necessarily gives way, as it cannot recede from the superincumbent pressure. It is just to add, that the attending surgeon, Dr. Edward Hartshorne, while discussing the probable etiology of the injury, had formed precisely the same opinion before seeing M. Gosselin's memoir.

Cystitis.—Dr. ASHHURST showed an inflamed and thickened bladder, with the following history:—

Mahlon G. S—— was admitted into the surgical ward of the Pennsylvania Hospital, on December 18th, 1861. He had been suffering from a slight chronic bronchitis for some time; he had also a good deal of irritation about his bladder, which, however, had not annoyed him sufficiently, before this time, to induce him to consult his physicians for that symptom. The patient was quite an old man, his mind was very much weakened, and for years he had had some enlargement of the prostate gland. The irritability of his bladder was now very great, and his desire to pass water almost constant.

On the morning of Dec. 24th, he was found to have become suddenly much worse. His mind was entirely gone, and the whole surface of his body was covered with petechiæ. He gradually sank, and died during an effort to void his urine, about 1 A. M. of Christmas morning. An *autopsy* was made seven hours after death with these results. Rigor mortis well-marked: skin and conjunctivæ slightly yellow: there were petechiæ over all the body, but more especially upon the legs. The lungs were very much congested and softened, but still crepitant. Both ventricles of the heart were filled with enormous fibrinous clots, which extended into both the aorta and pulmonary artery, nearly filling their entire calibre. There was a small bead-like deposit in one fold of the valve of the pulmonary artery.

The left kidney was contracted; it had a large serous cyst on its posterior surface, and a small one on its anterior. The bladder was very much inflamed and softened, and the prostate gland enlarged. All the other organs examined appeared healthy.

Tumours of the Dura Mater.—Dr. W. F. NORRIS exhibited the dura mater and brain of an epileptic patient, with the following account of the case:—

Joseph Lewis, aged 32, was admitted into the hospital February 16th, 1861, suffering from facial neuralgia. He was discharged cured, March 5th, readmitted June 10th, with epileptiform convulsions, and discharged relieved, July 27th.

He was readmitted November 25th, 1861, with epilepsy. He had well marked and frequently recurring paroxysms, during which he had universal muscular spasms, perfect insensibility, foaming at the mouth, and grinding of the teeth. The paroxysms were of varying duration, and would pass off, leaving a dull stupid state for hours afterwards. His memory and intellect were much impaired, he had great difficulty in speaking, with partial paralysis of the right side, causing a tottering walk. He complained constantly of violent pain in the forehead, and at times in the left side of the head, and would frequently exclaim "Oh, my head is splitting."

He was much emaciated, appetite tolerable, bowels constipated. Died January 4th, 1862.

Autopsy, six hours after death.—Rigor mortis commencing. Thoracic and abdominal viscera healthy; colon and rectum distended with feces. The brain was removed with its membranes, and weighed 52 ounces. On attempting to separate the dura mater from the brain, there was found a hard tumour growing from its under surface, forming a flattened patch about two inches square, compressing the left hemisphere and causing a depression of the cerebral substance. In one place it appeared to penetrate through the cineritious substance and form attachments to the white matter of the cerebrum.

There was also a smaller tumour of a similar nature, about half an inch in diameter, in the summit of the right hemisphere; it also depressed the cerebral substance, but did not adhere to it. A section of the tumour placed beneath the microscope showed a distinct fibrous stroma with fat.

Blood-clot within the Dura Mater.—Dr. DA COSTA exhibited a clot, about the size of a fist, situated between the dura mater and the skull.

An unknown man was admitted into the medical ward of the Philadelphia Hospital on the 5th of January, about 4 o'clock in the afternoon. He was perfectly comatose. His cheeks flapped during the act of breathing; the respiration was laboured, and the pulse scarcely perceptible. The pupils were contracted, and insensible to light. There was complete paralysis both of the upper and lower extremities.

It was very evident that he was labouring under compression of the brain, but nothing positive could be known of its commencement, for all we could learn of his previous history was, that he left home in search of drink, and was brought to the hospital from a police station.

Shortly after admission, a large blister was applied to the back of the neck, and dry cups all over the chest; after the bowels had been thoroughly emptied, stimulating injections of assafetida and turpentine were employed, as well as sinapisms to the stomach and feet, and stimulating frictions to the limbs. The head was shaved, and ice and cold water applied successively. An attempt was made to give him some medicine by the mouth, but was unsuccessful, as he was unable to swallow. Whilst this treatment was carried out, he was observed to be thrown, at intervals, into short convulsions, similar to those occurring in the last stages of some cases of delirium tremens. The pulse became a little stronger, but there was never consciousness, or decided reaction. After remaining twenty-eight hours in this condition, he died.

At the *autopsy*, the cause of the cerebral disturbance was fully revealed. A clot of dark blood, about the size of a man's fist, was found on the left side, between the skullcap and the dura mater. It was firmly adherent to the membrane, which itself was at that point thickened, and contained plates of bone between its layers, about an inch in diameter. The other coverings of the brain appeared healthy, with the exception of a few firm adhesions between the dura mater and the arachnoid, in the neighbourhood of the bony plates. After the removal of the dura mater, the most striking feature noticed was a decided depression on the part of the cerebral hemisphere corresponding with the position of the clot. The vessels of the brain were filled with blood, but its substance looked healthy. The skullcap was slightly indented, and the bone was somewhat roughened over the seat of the clot. There were no signs whatever of external violence. The changed state of the dura mater, and perhaps of the skull itself—evidently the

result of chronic lesion—had predisposed to the hemorrhage, but what had been the immediate exciting cause is unknown.

Jan. 22. Cases of Injuries of the Head.—Dr. JOHN ASHHURST, Jr., presented two specimens of fracture of the skull, with the following histories:—

CASE I. This patient, age uncertain, was admitted on January 9th, 1862, at 10 A. M., in a comatose condition. There was a great deal of ecchymosis of the left eyelids and ear. He had the peculiar form of respiration which has been called the "apoplectic whiff," and partial paralysis of the right side. While in the hospital he had several convulsions. He died at 12.45 the following night.

Autopsy, sixteen hours after death.—Rigor mortis well marked. There were two small superficial cuts in the scalp, and a bruise over the right temple.

On the left side there was a large amount of blood effused (several ounces in quantity) between the scalp and cranium. There was an extensive radiated fracture of the left side of the cranial vault, extending from the orbit to the occipital protuberance, and involving the entire left side of the calvaria; there was no displacement whatever. The fracture extended into the right orbit also. There was a very large clot over the whole left half of the dura mater.

The heart was softened; the other organs healthy.

CASE II. Solomon L——, æt. about sixty-five, was admitted on Jan. 19th, about 12.30 P. M. During the previous night he had fallen through a bridge at Phœnixville, where he was found in the morning and brought down at once to the city. When he entered the hospital he was very much prostrated, icy cold, soporose (partly from drunkenness), with a slight "apoplectic whiff," and the mouth somewhat distorted. There was a watery discharge from the left ear, and great ecchymosis of the left eyelids. These and the other rational symptoms indicated fracture of the base of the skull. There was no dyspnœa. Under treatment the man reacted, but sank suddenly and died at 10.30 P. M.

Autopsy, seventeen hours after death.—Rigor mortis well marked. A bloody effusion existed between the scalp and the cranium.

There was an extensive comminuted fracture of the petrous portion of the left temporal bone, involving the meatus auditorius, reaching into the frontal bone above and the occipital below, and terminating at the foramen magnum. There was a clot on the left side of the dura mater; the brain was somewhat congested, but otherwise healthy.

There were fractures of the 2d, 3d, 4th, 5th, 6th, and 7th ribs, some of them comminuted, with slight emphysema of the neck and chest. During life, neither had the emphysema been perceived, nor the costal fractures recognized, the brain symptoms diverting attention from the evidences of any other injury, and the prostrate condition of the patient forbidding any prolonged examination.

Much blood was effused in the anterior parietes of the abdomen, and along the course of the psoas muscles, behind the peritoneum. There were cysts in both kidneys, the largest on the kidney of the right side. They did not communicate with the pelvis, and contained a dark brown semi-solid mass which upon microscopic examination by Dr. Wm. F. Norris, was found to consist of a yellowish granular mass with cells about twice the size of blood corpuscles, some of which contained oil globules.

The liver was somewhat fatty; the other organs healthy. In connection with these cases, Dr. Ashhurst read the following account:—

CASE III. An unknown white woman, middle aged, admitted December 23d, 1861, about 11.30 P. M. in a comatose condition, with occasional convulsions. The saliva which flowed from her mouth was tinged with blood. She died in a convulsion about 4 A. M. on December 24th.

Autopsy, nine hours after death.—Rigor mortis but slight. There was a large bruise over the right eye and right side of the face, on each hand and each knee. There was much effused blood, partially clotted, between the scalp and the skull, a small clot between the skull and dura mater, and considerable effusion between the membranes and the brain.

There was also a clot in the membranes on the anterior surface of the medulla oblongata, and a large amount of liquid blood flowed from the vertebral canal around the medulla. There were two small exostoses on the left side of the middle fossa at the base of the skull.

The pleuræ were adherent on both sides, especially the left; there was no pleural effusion. There was about half an ounce of fluid in the pericardial sac. The right lung was greatly congested, the left only moderately so. The lung tissue floated in water. There was a fibrinous clot in the right ventricle of the heart. The liver was fatty.

These cases are interesting as showing the diagnostic inferences as to the existence of fracture to be drawn from the orbital ecchymosis and from the watery discharge from the ear. The former is generally supposed to characterize fractures of the base of the skull only; but in my first case the fracture was of the vault.

It would seem, therefore, rather to indicate fracture extending into the orbit, whether originating above or below.

My first and third cases differed merely in the greater profundity of the coma, in the first the partial paralysis (which might have arisen from other causes than fracture) and this orbital ecchymosis. In both, convulsions occurred; and in every other respect their symptoms were identical. I hence regard this as a very important and almost pathognomonic sign.

Watery discharge from the ear is eminently characteristic of fracture of the temporal bone, and when present, of itself renders the prognosis very unfavourable.

In relation to both these symptoms, Mr. Prescott Hewett's article on *Injuries of the Head*, in *Holmes' System of Surgery*, is very well worthy of being consulted.

REVIEWS.

ART. XI.—1. *Notes on the Surgery of the War in the Crimea, with remarks on the Treatment of Gunshot Wounds.* By GEORGE H. B. MACLEOD, M. D., F. R. C. S. Formerly Surgeon to the Civil Hospital at Smyrna, and to the General Hospital in Camp before Sebastopol; Lecturer on Military Surgery in Anderson's University, Glasgow, etc. Philadelphia: J. B. Lippincott & Co., 1862. 12mo. pp. 403.

2. *Commentaries on the Surgery of the War in Portugal, Spain, France, and the Netherlands, from the battle of Roliça, in* 1808, *to that of Waterloo, in* 1815; *with additions relating to those in the Crimea in* 1854–1855, *showing the improvements made during and since that period in the great Art and Science of Surgery on all the subjects to which they relate.* Revised to October, 1855. By G. J. GUTHRIE, F. R. S. 6th Edition. Philadelphia: J. B. Lippincott & Co., 1862. 12mo. pp. 614.

3. *A Treatise on Gunshot Wounds.* By T. LONGMORE, Esq. Deputy Inspector-General of Hospitals; Professor of Military Surgery at Fort Pitt, Chatham. Philadelphia: J. B. Lippincott & Co., 1862. 12mo. pp. 132.

IN a recent number of this Journal we reviewed the work of Dr. SCRIVE, Surgeon General of the French Army,[1] and on that occasion fully considered the principal *diseases* which scourged the armies engaged in the Crimea. We propose now to give some account of the *surgical* experience of this same campaign, and also to take a brief glance at the present state of the surgery of war.

At the time war was declared between Russia and the Allies, considerable changes had taken place in civil surgical practice, since the great European wars of the beginning of this century. The more important of these changes were the use of chloroform and ether as anæsthetic agents, and the more frequent recourse to excision of the joints and resection of injured portions of the long bones, in place of amputation of the limbs. Besides testing the applicability of these important recent discoveries and improvements to military practice, surgeons had to learn the effect of the modern conical bullets and rifled fire-arms upon the nature of gunshot wounds. Though the principles of surgery are always the same, their applicability must be greatly influenced by circumstances, and the practice must necessarily vary with the circumstances, and with the character of the injuries with which the surgeon is called upon to deal. Methods of treatment, universally acknowledged to be the best in civil life, may fail of being followed with like success in military practice. Guthrie in the preface of the volume before us says that the precepts it contains, which are the result of the experience acquired in the great campaigns in Europe from 1808 to 1815, altered, nay overturned, nearly all those which existed previously, on all points to which they relate. A remarkable example of

[1] Rélation Médico-Chirurgicale de la Campagne d'Orient.

this is the establishment of the fact of the great advantage in military practice of primary amputation over secondary. Led by the reflection that "amputation is a violence superadded to the injury, and therefore heightens the danger," it was maintained by Hunter, that after severe gunshot wounds amputation should be delayed for weeks. Practical experience in the field has demonstrated that, though Hunter's principles based on extensive observation in civil life cannot be controverted, yet their practical application in military surgery must be greatly modified, and primary amputation is here universally preferred. Indeed, Longmore declares that though men of the highest mental attainments have discussed the subject of gunshot wounds, we are nevertheless indebted to practical experience in military campaigns for every improvement, some few of recent date excepted, that has occurred in their treatment (p. 12).

One or two errors or oversights, in works recently published in this country, may be pointed out to show the special character of military surgery, and of the duties of an army surgeon. In one of them, written by one of our most distinguished surgeons, in the primary dressing of a gunshot wound, it is recommended that a roller should be applied from the distal end of the limb to some distance beyond the seat of injury, with a view of *facilitating the union of the sides of the wound by adhesive action.* No one with much practical experience in the treatment of gunshot wounds could for a moment be so forgetful of their nature as to give such an advice. In another work, the author of which is likewise a surgeon of great distinction, it is recommended that the sinks in a camp should be placed over a running stream in the neighbourhood. This no surgeon in the field would ever do twice; and few, it is to be hoped, would do the first time.

Each one of the works before us is the production of a man of extensive experience in military surgery. The well known and justly celebrated commentaries of Guthrie on the Surgery of the Wars against France in the beginning of this century, have been for years one of the richest mines in surgical literature. They have furnished probably more material for writers on military surgery than any work that has ever appeared. In the present volume, as the title indicates, commentaries on the Crimean war are added, showing the improvements that have been more recently made in the art and science of surgery.

At the close of the Crimean war some papers giving an account of its surgical results were contributed by Macleod to the *Edinburgh Medical Journal*, and abstracts of them were afterwards published in the quarterly summaries of this *Journal*. These papers were upon gunshot wounds and their peculiarities, hemorrhage after gunshot wounds, amputation through the knee-joint, statistics of amputations, wounds of the bladder and of the abdomen, and chloroform. They were read with eagerness by the profession, and esteemed as the production of an industrious and accomplished surgeon. In the present volume the author has endeavoured to record all the important results of the surgical experience of the war. He describes, moreover, the physical conformation of the Crimean peninsula; the camp life of the soldier, and its effect upon health; and the hospitals, nursing and transport of the sick. The distinction between surgery as practised in civil life and in the army; the peculiarities physical and moral of soldiers, and the distinct character of the injuries to which they are liable, are more noticed and dwelt upon by Dr. Macleod than they would have been by one who had long been habituated to military life, and this gives to his work a peculiar value to one about to exchange civil for military practice. An

appendix to this volume contains, together with much more that is valuable, a *résumé* of the report of the British Government on the surgery of the war in the Crimea, occupying over thirty pages, and containing surgical statistics of the highest interest and importance.

The work before us by Longmore, is the reprint of an article on gunshot wounds, contributed to the System of Surgery by various authors now being edited by Holmes of which a review was given in the last number of this Journal.[1] It is the best treatise on all injuries received from missiles projected by the force of explosion, that we have met with. Its excellence consists in its clear and concise description of the peculiarities of this class of injuries, and its eminently judicious advice as to their treatment, and also in the fact that the author, probably from advantages possessed on account of his position, gives more information in regard to the results of the practice of military surgery in recent times, from campaigns in Africa, India, Schleswick-Holstein, and Italy, as well as in the Crimea, than any other who has written.

In the Crimean war, for the first time, an opportunity was had of observing, on a large scale, the character of wounds inflicted by the modern *armes-de-précision*. It is always described as being much more severe than that of gunshot wounds inflicted by the old fashioned weapons. Longmore tells us that the new rifle with its conical ball has led to changes not only in the severity, but almost in the nature of gunshot wounds. Macleod, confessing that he is unprepared to say whether the great destruction occasioned by these balls results from their wedge-like shape, immense force and velocity, or revolving motion, or from a combination of all these causes together, is convinced that their use has made important changes in the character of gunshot wounds, both in the severity of the primary action on the parts struck, and in the aggravated evils by which they are followed.

The extreme swiftness and tapering form of the conoidal balls causes them to go through any organic tissue, no matter how dense and resisting, without deviation; and every portion of the body through which one of them passes, is inevitably deprived of its vitality. The great power of resistence often exhibited by the yielding elastic tissue of the skin, by tendinous and other structures, of which such curious examples are related by military surgeons, is no longer of avail against projectiles from modern weapons. Scrive relates that when soldiers were struck creeping on the ground, these balls went straight from one end of a limb to the other, through the bones, without changing their direction. An English surgeon also relates that he has known the same ball to go through the bodies of two men and lodge in the third.

Upon the soft parts, Macleod states that the conical ball, fired at short range, produces less laceration than the old ball; and that there is little difference in either the size or the discolouration of the wounds of exit and of entrance; but if the range be great, and the parts struck bony, with little covering of flesh, as in the case of the head or foot, then the tearing, especially at the place of exit, is greatly more marked. In speaking of the two wounds of exit and entrance, the same author adds that in many cases that of entrance is more regular and less discoloured than that of exit, but it

[1] Through neglect, which strikes us as very reprehensible, there is no acknowledgment of this fact in the volume. To one not aware of the original position of the treatise, the references in the text to other articles in the System of Surgery are of course incomprehensible.

was seldom clearly marked to his observation that the lips of the former were inverted, while those of the latter were everted (p. 101).

It is upon the bones that the effect of the wedge-like form of these balls is most evident. The round ball may be flattened against a bone, or turn round it, or only partly perforate it; but the conical ball is never seen to act in any of these ways. When it strikes a bone, it splits it into fragments, having mainly a direction parallel to the long axis of the limb, and forms fissures extending into the joints. Any kind of ball striking a bone about its middle will generally fracture and split the shaft, but by the conical ball, the bone is rent so extensively that narrow fragments, many inches in length, are detached, and lesser portions are thrown in all directions, crosswise at the seat of fracture, and driven into the medullary canal and the neighbouring soft parts. Macleod speaks of a case where the sequestra after being involved in new bone, were so prominent, so irregular, and so rough, as to look like the *bristles of a porcupine.* The same author says that he never knew a conical ball to mark a bone with any touch more gentle than what occasioned its utter destruction.

Longmore tells us that conical bullets are rarely met with flattened or so much altered in form by contact with the structures in the human body, as bullets not unfrequently were formerly under like circumstances, and the splitting of the conical ball with its immense force of propulsion, Macleod declares cannot occur. We have, however, been informed by Dr. William A. Hammond, that in fourteen cases of wounds from conical balls, received after the skirmish at Falling Waters, at the hospital at Hagerstown, under his care, the ball was split in every one; and that in one instance the ball was split into seven pieces, and in another into three. This difference in the effect we are unable to explain; but it may be owing to a difference in the material of which the ball is made, and thus easily to be understood.

The introduction of rifled weapons with conical balls has not only increased the severity of gunshot wounds, but it has also greatly increased the number of wounded in an engagement. This is a point of great importance, as telling us the amount of surgical attendance that may be required. Longmore says that Col. Milford, Chief Instructor at the British Government School of Musketry, has stated in a lecture that 80,000 rounds of ball cartridge were fired from the old musket in one day in Caffraria, and only 25 Caffres were known to be killed; and at the battle of Salamanca only one ball out of 3000 fired by the British took effect, while at Cawnpore one company of soldiers armed with the Enfield rifle brought down 69 out of a body of horsemen by whom they were attacked, at one discharge. At the battle of Solferino, where rifled weapons were so extensively used, some returns showed that in 24 hours, 11,500 French, 5,300 Sardinians, and 21,000 Austrians were laid *hors-de-combat.*

It is evident from what has already been said that the old rule in examining a gunshot wound to find out the amount of injury and to extract foreign bodies, of placing the patient in the position he occupied when struck by the missile, with special reference to the relative position occupied by the person who fired the ball, is more to be insisted upon than ever since the introduction of modern weapons. It is obvious that the less a ball deviates from its straight course, the greater must be the advantage of attending to this precept, and we find that Macleod says the great point to attend to is undoubtedly the fulfilment of this rule. Longmore also states that in almost every instance the examination will be facilitated by attention to this precept. In the French service, Scrive says that the importance of

this rule, which was laid down by Ambrose Paré, the first master of military surgery, was fully determined.

In making the prolonged searches which are sometimes necessary for the extraction of foreign bodies, Macleod tells us that chloroform was found very useful, in the Crimea, not only in preventing pain, but also in restraining muscular contractions, by which obstacles are thrown in the surgeon's way (p. 126).

It was formerly the custom, though of late years it has been generally abandoned, to scarify the edges of all gunshot wounds as a preventive measure. Of course no one would hesitate to enlarge the wound for the purpose of aiding in the search for a bleeding vessel, or in the extraction of a foreign body, but what is here meant is practising incisions to prevent subsequent strangulation of the tissues after the development of the inflammatory swelling.

From his experience in the Crimea, as was noticed in the review above referred to, Scrive declares that the benefits of this practice were there demonstrated in the French service by the favourable results that followed; and that its advantages in remedying strangulation, excess of inflammation, the stagnation of pus, and traumatic gangrene, were seen in numerous instances. Longmore speaks of this practice as a discarded one, and all that Macleod says on the subject is to style it "the exploded custom of scarifying the wound." Guthrie likewise teaches that the wound ought not to be dilated, because such operation may at a more distant period become necessary; and that bleeding arteries, broken bones, and the lodgment of extraneous substances are the only legitimate causes for dilating wounds in the first instance.

The difference between the opinions of the English and French on this point may be owing to the fact that the former are more impressed by the teachings of Hunter, who says that "no wound should be opened because it is a wound, but because there is something to be done which cannot be executed unless the wound is enlarged," while the French follow the experience of Larrey, who applied these *débridemens* to almost every wound.

It was the experience of the Crimean war, as of most wars, that the tourniquet is of little use as a resource against primary hemorrhage on the field of battle. It should not be used by a surgeon, for he must not trust to its pressure, but at once secure a bleeding artery by ligature; and in the hands of another, it is an untrustworthy and even a dangerous instrument.

We find that Longmore agrees with those who teach that uneducated attendants should be recommended, in preference to attempting to use a tourniquet, to place a finger in the wound and make compression where they find most effect produced upon the flow of blood.

It should, besides, be well understood that primary hemorrhage calling for surgical aid is of rare occurrence after a gunshot wound. Many men doubtless die suddenly of loss of blood, from the opening of one of the main arteries; but, as Longmore states, in those wounds to which the surgeon's care is called, the primary hemorrhage is small in quantity and of short duration—a sudden flow at the moment of injury, and nothing more.

In the treatment of secondary hemorrhage, from the results of the cases that fell under his observation in the Crimea, Macleod gives his testimony to the soundness of the views of Nélaton, regarding the application of a ligature to an artery in an inflamed and suppurating wound[1] (p. 132).

As a general rule, surgeons are unwilling to trust to a ligature applied

[1] Nélaton's paper was read to the Academy of Medicine in 1850.

under such circumstances, persuaded that it will cut its way immediately through the coats of the vessel or fall prematurely. The external coat however resists, as usual, when the thread is tied, and the canal of the vessel is as surely obliterated as when its ligature is practised in a fresh wound; the only difference is that the ligature falls rather sooner. We have several times at autopsies tied with a fine thread the crural artery that had been bathed in pus for more than a week, in an unhealthy stump after amputation of the thigh, and never saw the external coat divided. It is very important to be fully persuaded of this condition of the arteries in suppurating wounds, for unless the surgeon be willing to practice upon them, in obstinate cases of consecutive hemorrhage in wounds of the extremities, he has only two resources left, to ligate the principal vessel between the wound and the heart, or to amputate the limb. Of the value of the former resource Guthrie says: "*Whenever the collateral circulation is sufficient to maintain the life of the limb, blood must pass into the artery below the wound, and must, as a general rule, pass up and out through the lower end of the divided artery, unless prevented by the application of a ligature, or by some accidental circumstance forming an exception to the rule but not the rule itself*" (p. 190).

In all cases, therefore, of hemorrhage in a gunshot wound, secondary as well as primary, the two ends of the divided artery must, if possible, be tied in the wound.

As regards the removal of balls known to be in the tissues, the experience of modern surgeons is decidedly against the doctrine of Hunter[1] that, when left, they cause but little harm. This celebrated surgeon goes so far as to maintain that even when they can be felt beneath skin that is sound, they should be let alone, on the ground that the extent of inflamed surface is proportionably increased by excision. M. Hutin, the surgeon in-chief to the Hôtel des Invalides, says that while 4000 cases had been examined by him in five years, only twelve men presented themselves who suffered no inconvenience from unextracted balls, and the wounds of two hundred continued to open and close continually, till the foreign body had been removed. As stated in the review of the work of Scrive, above referred to, the immediate extraction of all foreign bodies was the general rule with the French surgeons in the Crimea, and the three authors, whose works are before us, likewise very decidedly favour the making of every reasonable effort for this purpose. Macleod even says that the position of a ball under a fascia, or in contact with a bone, should make us risk much in order to remove it. Experience has conclusively proved that the nervous and inflammatory symptoms of the early stages of a gunshot wound are heightened by the presence of a foreign body, and that it almost invariably keeps up long-continued and exhausting suppurations. The influence upon the mind of the patient must not be overlooked, for men are rendered miserable by a vague apprehension of danger, so long as the foreign body is known to be still unextracted.

"If we examine," says Macleod, "into the opinions of surgeons on this point, we find that nearly all those who look upon the extraction of the ball as a matter of secondary importance are civilians, while military surgeons place great weight upon its accomplishment."[1] (p. 111.)

[1] It should be recollected that though Hunter filled some of the highest positions in the English service, he only served abroad about three years, and then his sole opportunity of seeing active service was as staff-surgeon in the expedition to Belleisle.

The ball should always, therefore, be immediately removed, unless its extraction requires very extensive incisions, risking the injury of important parts, or that would cause more serious mischief than its presence, and its after effects.

In times long gone by, a gunshot wound was universally regarded as one infected by a certain poison, and to destroy this, it was always immediately cauterized with a red-hot iron, or with boiling oil. This practice, at once cruel and injurious, was continued until Ambrose Paré found, by a happy chance—as is often the case in medical changes and improvements—that wounds did better when this was omitted. The manner in which he made this discovery is told with such charming simplicity, that the account will be read with interest:—

"Or, tous les susdits soldats du Chasteau (le château de Villare), voyans venir nos gens d'une très grande furie, firent tout devoir de se défendre, tuèrent ou blessèrent un grand nombre de nos soldats, à coups de piques, d'arquebuses et de pierres, où les chirurgiens eurent beaucoup de besogne taillée. Or, j'étais en ce temps-là bien doux de sel; je n'avois encore vu traiter les playes faites par arquebusades, pour le premier appareil. Il est vray que j'avois lu en Jean de Vigo, livre premier des Plaies, en général, chapitre huitiême, que les playes faites par bastons à feu participent de vénénosite, à cause de la poudre, et pour leur curation commande les cautériser avec l'huile de sambuc toute bouillante, en laquelle soit meslé un peu de thériaque, et pour ne faillir paravent qu' user de ladite huile sçachant que telle chose pourroit apporter au malade extrême douleur, je voulus sçavoir, premièrement que d'en appliquer, comme les autres chirurgiens faisoient pour le premier appareil, qui estoit d'appliquer ladite huile la plus bouillante qu'il estoit possible dedans les playes, avec tentes et sétons; tellement que je pris le hardiesse de faire comme eux. Enfin mon huile me manqua, et fus contraint d'appliquer en son lieu un digestif fait de jaune d'œuf, huile rosat, et terebenthine. La nuict, je ne peus bien dormir à mon aise, craignant, par faute d'avoir cauterisé, de trouver les blessez, où j'avois failli à mettre de ladicte huile morts empoisonnés, qui me fit lever de grand matin pour les visiter, où, outre mon espérance, trouvay ceux auxquels j'avois mis le médicament digestif sentir peu de douleur, et leurs playes sans inflammation ni tumeur, ayant assez bien reposé la nuict; les autres où l'on avoit appliqué ladicte huile bouillante, les trouvay fébricitans, avec grande douleur et tumeur aux environs de leurs playes. Adonc je me délibéray de ne jamais plus brusler les pauvres blessez d'arquebusades."

At the present day it is well known that there is no mysterious poison in a gunshot wound, but that it is simply a wound contused to the greatest degree, and that the proper treatment is that usually adopted in cases when healing is to take place by the slow process of granulation and cicatrization. Of course no attempt is ever to be made to bring about union by the first intention. In all the three works before us cold water is recommended as the best application to be first made, in the local treatment of a gunshot wound; and in wounds of the forearm and hand, Macleod says irrigation is of the greatest service (p. 119). The cold water should be continued, according to Guthrie, as long as cold is grateful to the sufferer; when it ceases to be so, it should be exchanged for warm. In all the applications made to a gunshot wound, Longmore states that "pressure, weight, and warmth," must be avoided as much as is possible, consistent with the end in view. A roller, as a surgical application, Guthrie says, "is useless, if not injurious," and directs that nothing more than a few inches of linen bandage is to be used, applied over the wet lint, to prevent it from changing its position during sleep. After suppuration is fully established, the surgeon must be guided, in the local treatment, by the general rules applicable to all wounds

healing by granulation. It is to be remarked, however, that though poultices very often may be used most advantageously in civil practice, experience has proved that they should seldom be permitted in a military hospital. Guthrie says of them that they are generally cloaks for negligence, and "sure precursors of amputation in all serious injuries of the bones and joints." (p. 29.)

The experience of the British surgeons in the Crimea in regard to the immense benefits to be derived from the use of chloroform in military surgery is fully confirmatory of the statements made by the French surgeon Dr. Scrive, of which due mention was made in the review of his work before referred to. Macleod says that during the whole war he never had reason for one moment to doubt the unfailing good and universal applicability of chloroform in gunshot injuries *if properly administered.* He adds, moreover, that he conscientiously believes that its use in the British army directly saved very many lives, that many operations necessary for this end were performed by its assistance which could not otherwise have been attempted; that these operations were more successfully, because more carefully, executed; that life was often saved by the avoidance of pain, the *morale* of the wounded better sustained and the courage and comfort of the surgeon increased. Longmore says it was constantly used in the division to which he belonged throughout the war and no harm was ever met with from its use, while certain advantages appeared especially to fit it for military surgical practice; so far from adding to the shock of such cases as an army surgeon would select for operation, the use of chloroform seemed to support the patient during the ordeal (p. 127). The last named author cites also M. Armand as writing that during the late war in Italy chloroform was as extensively used and was as harmless as in the Crimea, and that he never heard of an accident from its use. In Guthrie's work will be found (pp. 55–58) some very valuable observations in regard to the use of chloroform, contributed at his request by Dr. Snow.

The experience of the Crimean war in regard to the time for performing amputations is the same as that always recorded by military surgeons. Scrive states that in the French service the proportion of the success of the primary amputations surpassed, sometimes one-half, sometimes two-thirds, the favourable results of consecutive amputations. Macleod also says that the experience in the Crimea was, as it has always been, unequivocal in favour of early amputations and goes so far as to declare that in place of merely advocating interference within twenty-four hours, "the prevailing idea at present would be better expressed by saying, that every hour the operation is delayed diminishes the chances of a favourable issue" (p. 319). As to the presence of shock, Macleod states that it is the opinion of many army surgeons of large experience that unless very decidedly marked it is no hindrance to operation if chloroform be given to remove the depressing and at times destructive effect of pain. Long before the discovery of chloroform, Larrey wrote that it was demonstrated that shock, far from being a contra-indication to primitive amputation on the field of battle, should determine the surgeon to practice it, and that the effects of shock, far from being aggravated, diminished and disappeared insensibly after the operation. The same great surgeon tells us that he has seen a considerable number of soldiers perish because the operation had been performed too late, although operated upon within twenty-four hours, and relates that of three whose both legs he removed after the battle of Wagram, the one who was operated upon the first, and only a few moments after the shot, was the only one who was saved.

There is a second point connected with the question of amputation, where, notwithstanding all the late improvements in medicine, the experience of recent wars is the same as that of all previous ones, namely, that in all doubtful cases no attempt should be made to preserve the limb. Cruel as the precept sounds to one who has practised only in civil life, it is so universally maintained by all who have had military experience that it must be regarded as unquestionably correct. The surgeons in the Crimea teach this as urgently as Hennen did half a century ago after passing through the great campaigns against Napoleon.—"*The sum of human misery will be most materially lessened by permitting no ambiguous cases to be subjected to the trial of preserving the limb.*" One great cause of the mortality attending compound fractures of the limbs in the British army in the Crimea according to Macleod, was undoubtedly the great striving after conservatism which influenced all the surgeons of the British army. In the French army the result of experience was the same, and we find Scrive stating, as quoted in the review already referred to, that if the surgeon hesitates in cases that appear doubtful, or if he places himself a little too much on the ground of what is called conservative surgery, he will not be long in repenting of it, and will often see wounded men die in consequence of wounds whose lives might have been saved had amputation been employed.

For several years past, one of the most interesting questions in surgery has been, how far in compound injuries to the extremities excision of the joints and resection of portions of the long bones may be substituted for amputation, as exposing life to less danger, or securing a more useful limb. The experience of recent wars on these points does not appear to us to be more encouraging than that of former ones, at least as recorded by Larrey and other French surgeons, and also by Guthrie among the English. Hennen condemns these operations; even excision of the shoulder, he says, is "more imposing in the closet than applicable in the field."

In the upper extremity, the results of excision of the shoulder and elbow joints have been, as heretofore, exceedingly satisfactory. During the time the surgical statistics were accurately kept in the British army in the Crimea primary excision of the head of the humerus was performed 8 times with 1 death, secondary excision 5 times with no death. Of the elbow joint, primary excision was performed 13 times with 3 deaths, secondary 4 times all dying from causes not connected with the operation; and the same joint was partially resected 3 times, in all successfully. In the Schleswig-Holstein campaigns—when great attention was paid to resection of the joints, and the results of which have been published by Esmarch in a very valuable essay—of 19 patients in whom the shoulder-joint was resected, in 12 a useful arm was preserved and 7 died. In not a single instance did complete anchylosis occur, and in several the power of motion became so great as to enable men to perform heavy work. Of 40 patients for whom resection of the elbow-joint was performed, 6 died and 32 recovered with a more or less useful arm; 1 remained unhealed when Esmarch wrote his essay (1851), and in one mortification ensued and amputation was performed. Scrive does not give the particulars of the French experience in the Crimea on this subject but says that resections, though tried a very great number of times did not succeed, with the exceptions of a certain number of those practised upon the upper extremity and principally the resection of the head of the humerus, which seems to enjoy great privileges in this respect and to furnish frequent examples of success.

Resections of portions of the bones also appear to be very successful in

the upper extremity; in one case, related by Macleod, as much as three inches were successfully removed from the humerus.

In the lower extremity, owing to a smaller supply of blood, a less free anastomosis between the vessels, the greater drain there is upon the system during the period of suppuration, and the constrained and irksome position the patient must retain during the treatment, the results of these operations are far less satisfactory. The knee-joint was excised once in the Crimea, and the patient died, and the same results followed in the only other instance in which this was done for gunshot injury in the Schleswig-Holstein campaigns. When the knee-joint is implicated in a gunshot wound, Macleod says he never heard of any one recovering without amputation; and he took so much interest in these cases as to visit every one he could hear of. Guthrie, also, never saw a case recover in which the limb was not removed. At the hip-joint, according to the experience of the Crimean war, excision has certain advantages over amputation. Out of twenty-three cases of amputation performed in the French and British armies, not one recovered, and nearly all died, miserably, very soon after the operation. Out of six cases of excision, one recovered entirely, one survived a month, and all lived in comparative comfort for a considerable time.

In the Crimea, whenever resection of portions of the femur was practised, every case, without exception, proved fatal. In the bones of the leg, when neither the ankle nor the knee-joints were implicated, the results were more favourable. When both the tibia and fibula were injured nearly 19 per cent. recovered, when the tibia alone, 36.3 per cent., and when the fibula alone, 40.9 per cent.

In the recent campaign in Italy, Longmore states that in the lower extremity the practice of conservative surgery was almost entirely abandoned.

Medical men should at once avail themselves of the opportunity afforded them at the present time, by the republication of these works in this country, of making themselves conversant with the surgery of war.

From the little that has been said in this review, it is apparent that military surgery has its peculiarities, and that it can only be taught by one who has had experience in the field. The necessities of the case have thrown into the service, both of the army and of the navy, in this country, numbers of men who never before have turned their attention to these peculiarities, and who could obtain but little of the information they might desire, except from old editions of Guthrie and of Hennen. As to the little books that were hurriedly issued in this country, at the beginning of our troubles, to supply the want that was then felt, surgeons who have seen military service do not consider them as fulfilling their object.

Some sad things have happened, when medical men have been suddenly called to fulfil the duties of a surgeon in the army without due preparation. We have read of several instances that may well be related in connection with what has just been said. In one, a great amount of mortality prevailing in a corps of the British army in India, the principal inspecting surgeon went to see, personally, the cause. Arriving at the station, he proceeded at once to the headquarters of the surgeon, whom he found dead in his chair, with the Inspector's letter open before him. Unequal to the duties of his office, he ended his sorrows with a dose of morphia, to avoid the shame of exposure. In another case, in an encounter with the enemy, an artillery-man was so severely injured as to require immediate amputation of the limb. The surgeon entered his tent, ostensibly to procure his instruments; but, as he was rather long absent, an inquiry was instituted to know what had

become of him. He was found lifeless. He had committed suicide to avoid the performance of an operation with which he was practically entirely unacquainted. We are not aware that the mortality in our army has been increased, in a similar way, by the medical men who have been suddenly attached to it; but what has happened once, may occur again. Perhaps the little books, already referred to, and which have the advantage, so much insisted upon by some persons, of being portable in the pocket, and ready for immediate reference, have, in this respect, indeed, been of some advantage.

We cannot take leave of the books before us without feeling increased pride in belonging to a profession to which humanity owes so much, and which has contributed to successfully diminish the dreadful sufferings of war. In the Crimea were found worthy successors, in both the allied armies, even of such men as Larrey, Percy, and Paré, of Hennen, Guthrie, and Hunter. When we reflect that an endeavour has been made in our Congress to place on a footing with the followers of men such as these, the ignorant and unscrupulous followers of a German charlatan, we have no words to express our indignation. Should such an attempt ever prove successful, no surgeon, who has a due appreciation of his own position, and a proper respect for the great and good men who have gone before him, can remain one moment longer in the service. The impudent fanatics who would now instruct our generals in the art of war, interpret our laws and constitution to the highest legal authorities, teach religion and morals to our most learned divines, and the art and science of medicine to our profession, will be responsible for the consequences. W. F. A.

ART. XII. *Traité d'Hygiène Navale ou de l'Influence des Conditions Physiques et Morales dans lesquelles l'Homme de mer est appelé à vivre et des moyens de conserver sa santé.* Par le Docteur J. B. FONSSAGRIVES, Professor à l'école de Médecine navale de Brest. Illustré de 57 planches intercalées dans le texte. 8vo. pp. 770. Paris, chez J. B. Baillière, 1856.

Treatise on Naval Hygiene or on the Influence of the Physical and Moral Conditions to which the Seaman is exposed, and of the Means of preserving his Health. By Doctor J. B. FONSSAGRIVES, Professor in the School of Naval Medicine at Brest. Illustrated by 57 plates, &c.

THE preservation of the health of those persons whose necessities or unfortunate tastes compel them to pass a large part of their lives afloat, is a subject of interest to physicians and statesmen as well as to those who derive their livelihoods and fortunes from maritime pursuits. The circumstances under the influence of which men live in ships, in connection with the diseases from which they most generally suffer and die are worth consideration by medical philosophers, sanitarians, and philanthropists. The seaman of the present day pursues his vocation in less peril than the seaman of a hundred years ago, and his chances of longer life are greater. But he is still exposed unnecessarily to causes of disease, discomfort, and unhappiness, either through the ignorance, or the heedlessness of those who possess the power to remove very many of the obstacles to his well-being. In the commercial marine everywhere, the corporeal interests of the sailor are often sacrificed to the cupidity of ship-owners, and in the naval services of almost all nations to ignorant conceit or love of mere motive-

less display and glitter, sometimes found in the cabin or on the quarter deck. We occasionally find men in authority on board ships who fancy themselves endowed with universal knowledge, although entirely ignorant in many departments, who are unwilling, seemingly, to confide in the knowledge of the medical officers associated with them, and for some such reason, treat their hygienic recommendations with indifference, while they unhesitatingly rely upon them to treat disease or wounds. These same men, however, sometimes yield on this subject as a personal favour to the physician what they would utterly deny to his professional authority. There are very many also who respect medical authority and cheerfully adopt suggestions from a surgeon for the preservation of the health of a ship's company.

No benevolent man can contemplate nautical life, in view of its physical and moral privations, and its exposures to the chances of disease and death, both in peace and in war, without feeling that gratitude is due to every one who attempts to lessen the evils which surround it, even in this nineteenth century, when the sailor's condition is vastly improved. Camoëns, who died in 1579, seems to have commiserated sailors in his day.

> Curst be the man who first forsook the ground,
> And fasten'd canvas to a sapless tree!
> Worthy of anguish in the pit profound,
> If that true faith I hold religion be.
> May never judgment lofty and fecund
> Nor vivid genius grace his memory,
> Nor sonorous harp his bad exploit proclaim
> But black oblivion shroud himself and name.[1]—*Canto* IV. St. CII.

Surgeons in our own ships of war have no authority to enforce measures for the hygienic condition of the vessels on board of which they serve, beyond submitting their suggestions or recommendations. It always rests with the officer in command to adopt or reject them without incurring any legal responsibility. But it might be embarrassing to the service, perhaps, to place any power over the subject in the hands of medical officers, unless such power were limited by a right of *veto* in the commanding officer; but that *veto* might be associated with an obligation to record reasons for refusing to act on the surgeon's deliberate recommendations, to be submitted to the government.

In practice, the duties of a surgeon on board ship are limited to treating the sick and hurt, and keeping a record of his prescriptions. Beyond this he can do nothing without the sanction of the captain. He dare not use a light even, either while caring for his patients or in his own quarters after a stated hour at night, without previously obtaining permission, no matter what may be his nominal rank or experience in the navy. To assert that such permission is never denied, even if it were true, which it is not, is not a satisfactory reason for withholding this much power or privilege; nor is it a conclusive reason to urge that this restriction is a necessary precaution against fire, because every half-hour through the night all lights are visited, except those in the apartment of the captain, and their condition reported to the officer of the watch. Nor can it be easily understood, how a light burning by permission of the captain or officer of the watch on deck, is less dangerous than it would be while burning on the exclusive responsibility of the surgeon.

A ship, like a city, is inhabited by a population composed of people

[1] The Lusiad of Luis de Camoëns, translated by Edward Quillinan, London, 1853.

differing in age, professions, degree of mental culture and morbid aptitudes. Like a city, a ship has its mode of structure, its atmosphere, its salubrity, and peculiar alimentation; the necessities of air, water, and light of its population are the same, though satisfied under dissimilar conditions; an analogous system of preserving health, of cleaning and of draining is essential to them; both are at times liable to epidemics which defy the strictest observance of the laws of hygiene.

Dr. Fonssagrives divides his work into six books, each devoted to the consideration of a branch of the subject. It is proposed to present a summary of them to indicate the scope and nature of his researches.

A ship is a habitation composed of vegetable materials almost exclusively; ships of which the hull is of iron contain considerable quantities of wood, employed in constructing the decks, partitions, &c. It is calculated that a first rate ship of the line contains in its structure about 6000 cubic metres of wood. The injurious influence which such a vegetable mass may exercise when some portions of it, which always happens, are subjected to conditions of humidity and temperature favourable to the decomposition of wood may easily be conjectured.

Old ships, whose worm-eaten ribs fall to mould at the slightest touch, in which destructive animals have excavated numberless galleries reducing their wood to a spongy state and thus multiplying surfaces for contact with water are most unfavourable to salubrity; besides, age separates the seams of ships and permits water, under the influence of considerable external pressure to filter through them as through a sieve, and maintains them in a state of constant humidity which is highly favourable to vegetable decomposition. And what chemical forces might not do, the destructive action of certain mollusks, *tubicolæ, teredines, pholades*, &c., and vegetable parasites which determine dry-rot, complete, and their organic remains joined to those of the wood, add another element to the fetid exhalations issuing from the lower parts of ships.

The essential elements of wood are *lignin, cellulose*, nitrogenous matters and salts.

Cellulose constitutes the frame of the cells and vessels, upon the internal surface of which the lignin is deposited; the azotized or nitrogenous matters and the salts form the principal solids of the sap, which are deposited by evaporation of its water. Certain essences are found amidst these fundamental elements; the pine, the cedar, the guaiac, &c., have their lignin or matter incrusting their cells mingled with resinous substances, which contribute to their preservation; oak contains tannin and gallic acid, other woods contain colouring matters used as dyes or odorous principles, &c.

The elementary composition of wood varies, age, soil, exposure, alike modify it, and as much may be said of different parts of the tree.

The older the wood the thicker the incrusting layers of its canals become, and, as a consequence, the sap containing the nitrogenous elements which, at a later period in vegetable decomposition, play the part of ferments, is excluded. Hence it may be inferred that the advanced age of the ligneous layers becomes at once a condition of durability and salubrity, and hygiene benefits by the architectural rule, which, in the construction of ships, requires the wood of trunks of a certain age to the general exclusion of branches. Inasmuch as the sap-wood decays more rapidly than the true wood, and the liber and cortical layers more rapidly than the sap-wood, the duration and salubrity of the vessel demand that all sap-wood should be carefully excluded from its structure. And it should not be forgotten

that wood covered with its bark in the low and humid parts of a ship becomes a true cause of insalubrity.

The season when trees are believed to contain least sap is selected for cutting timber designed for architectural purposes with a view to durability, because experience has proved that the presence of sap in wood accelerates its decay. Means are resorted to besides to season, that is, to dry wood as completely as possible before employing it, but no plan has been entirely successful. Drying by heat was found to render wood liable to crack, to diminish its tenacity, and to increase its hygrometric quality.

Various processes have been adopted and then abandoned to preserve ship timber from decay, but the problem yet remains to be solved. Oxidation and fermentation simultaneously in action are the movements which are destructive to wood. Contact with air favours oxidation, and contact with water helps fermentation. Contact with air cannot be avoided; but if humidity, without which the natural ferments contained in it would be inactive, could be removed, wood might be indefinitely preserved in ships. The comparatively superior durability of wood used in the structure of houses and of furniture is due to the absence of humidity in a greater degree than in nautical structures. And for the same reason, other circumstances being equal, habitations on shore are more salubrious than those afloat. The art of preserving the timber of ships and the art of preserving the health of those who inhabit them seek for means to lessen and destroy humidity, which is the great source of destruction of both wood and salubrity.

The capillary structure of wood renders it absorbent of moisture. To obviate its dilatation through the absorption of liquid from the atmosphere and contraction again when deprived of it through exposure to artificially warmed air, it is covered with paint, which, filling the pores of the wood, hinders though it may not entirely destroy their absorbing property.

Experience taught that vessels built in the open air in wet seasons were much less durable than those constructed in dry weather, because the timber became almost saturated with water which no process tried was effectual in subsequently removing. For such reason the practice of building ships in great ship-houses in which they are sheltered from rain and exposed to the drying effects of free ventilation until launched was instituted and ever since continued. Fortunately for humanity, the efforts made to prolong the durability of ships by having the timber felled in the period of its growth most favourable to its duration, to have it free from sap-wood and bark, and as dry as possible when put into the vessel contributed equally to their salubrity.

It is asserted that the durability of two ships built of the same wood will be in inverse proportion to the time they remain on the stocks, and for this reason, as well as for the sake of economy and the health of those who are to live in them, ships should be constructed very slowly. While building, it is recommended that some strakes of planking should be left off till the last moment, and that as many as possible of the holes bored for the bolts and tree-nails should be left open, and the seams should be left uncaulked till within a few days before launching that the circulation of air may exert its drying influence as long as possible.

Spaces left between the ribs become resting places or reservoirs of confined air and moisture which promote the putrid fermentation of wood, and for this reason those vessels which have solid frames without interstices between the ribs or timbers are most durable and most salubrious.

In spite, however, of all precautions, even the healthiest ships are sites of incessant vegetable decomposition, which is promoted by the heat of the confined atmosphere and contact with water loaded with putrescible matters. Under these influences the wood changes, turns dark coloured, loses its cohesion, and passes to the condition of wood termed *carbonous*, a kind of detritus insoluble in the alkalies, which a degree's further advance in chemical disaggregation will transform into mould or humic acid, which will saturate a solution of potassa. This mould is formed of carbon, hydrogen, and oxygen. M. Malaguti thinks that the nitrogen which analysis discovers is simply interposed between the molecules, and proceeds from carbonate of ammonia absorbed. The passage of wood to the condition of humus does not occur without giving rise to a variety of gases, the phosphorus and sulphur which enter into the composition of the protëic matters of wood intervene in the production of these gases, and there is formed phosphuretted hydrogen which causes the phosphorescence of rotten wood, and sulphuretted hydrogen which imparts to the products of vegetable putrefaction such a repulsive odour. The organic matters contained in sea-water in which the sides of the ship are soaked and those proceeding from animal and vegetable parasites developed in them, also furnish their contingent to the mephitic exhalations which are disengaged from the holds of certain ships. The transformation of wood into mould is never effected except in a partial degree on board ships; it is found complete, however, at certain isolated points in ribs or beams, but most commonly the disorganization of wood is arrested in that condition termed dry-rot.

Cryptogams are parasitic productions developed in preference on organic matters in process of decomposition, because there only they find in abundance the nitrogen necessary to their chemical constitution; hence, from the moment a standing tree dies, or rots after being felled, it becomes covered by cryptogamic vegetations. The wood of ships becomes a prey to them as soon as prolonged humidity sets up the work of internal fermentation; and their sporules extending from point to point by aid of the waters of the hold, kept moving by the motions of the ship, secure the diffusion of those parasites. These cryptogams absorb the juices of the wood, which becomes friable and its aspect justifies the term dry-rot, applied to this condition. The rapidity with which dry-rot destroys wood is shown by the fact that in the Queen Charlotte, a British ship of the line, it committed such ravages in less than two years, that it was necessary to reconstruct her almost entirely. Such was the humidity of this vessel, that a hygrometer (1000° of the scale of which indicated saturation), marked 826.6° in the hold near the pump, and 464.2° only in the external air.

Humidity is the most powerful cause of the destruction of the material of ships, and also of determining the insalubrity of those materials, and it is no exaggeration to assert that the small quantity of water which daily leaks through the sides of a ship, from the sea is no less perilous to the lives of sailors than the tempests against which they are liable to contend. Hence the practice, which has happily fallen into disuse to a great extent in the past few years, of pumping water into the holds is as injurious to the salubrity as it is to the durability of ships.

The metallic materials employed in the construction of ships exert only an indirect influence on naval hygiene. Next to wood in the scale of importance iron stands first. It is used in securing the joints, for ballast, in steam engines, &c. The incessant oxidation of masses of iron must liberate enormous quantities of electricity, to say nothing of that produced by friction of the different parts of engines.

Copper is chiefly employed upon the external surface of the hull. The English frigate Alarm of 32 guns was the first vessel, in 1761, that had the bottom covered with copper. The brass ornamentation on the decks of ships is injurious to the eyes, from the influence of strongly reflected light.

The textile materials of sails and cordage are scarcely less liable to fermentation than wood. Sails when perfectly dry exert no influence on nautical hygiene; but stowed damp in the sail-rooms below, subject to the elevated temperature of the interior of the vessel, a sort of slow combustion occurs in the cellulose of the vegetable tissue, and they exhale a disgusting odour, and become covered with mould.

The general substitution of chain for hemp cables, has been an advantage to the salubrity of ships. They were in use amongst the ancient Gauls. In his commentaries, Cæsar says, *anchoræ, pro funibus, ferreis catenis revinctæ.* Hemp-cables, after soaking in water, and covered with mud of the anchoring ground, were stowed away in the hold of the ship when she put to sea, to dry as well as they might, or become a focus of fermentation and putrefaction to a greater or less extent.

Tar, which is largely employed in ships for the preservation of hempen cordage from moisture, and in calking and sealing joints, seems to exert no definite influence upon nautical hygiene, at least no one attributes disease to the respiration of an atmosphere loaded with the odour of tar.

The kind of paints used is of some importance. In ships of war black and white are the prevailing colours. It is objected that black paint causes wood exposed to the sun's rays to heat to a greater degree than red or white; and that under equal circumstances, a vessel painted white outside would be cooler internally than the same ship would be if painted black, and that this would be more especially notable in iron vessels and steamers. But fashion has determined that the exterior of cruisers must be black; and no argument will soon induce a change in this respect. White is adapted to the interior parts of ships, especially below the deck, because it reflects the light, while a darker hue would absorb it. But it may be well questioned whether some sober tints of cream or slate might not be less irritating to the eyes than glaring white above the deck.

Where paint is used, white-zinc is preferable to white-lead, but neither is as wholesome as white-wash or covering the interior surfaces below the spar deck with milk of lime. Our author suggests that an addition of a small quantity of chloride of lime or hypochlorite of soda to white-wash used in ships might contribute to their salubrity.

When the interior parts of a ship are to be painted, while the crew is on board, a warm dry day should be chosen for the purpose, and men enough should engage in the work to complete it, that the vapour of turpentine may not be long maintained in the atmosphere, because observation has led to a belief that it is very prejudicial to the health of many persons, and some authorities believe that painters working lead paints suffer as much from the influence of the turpentine as from the metallic carbonate.

Under the denomination of ship's stores, besides sails and cordage, are ballast, fixed and movable, the former consisting of iron and the latter of stones which may be thrown away when cargo is substituted; coals as well as fatty materials and oil, which are largely used for lubricating machinery in steamers, all of which are more or less liable to spontaneous combustion. The various questions of hygiene of steamers in this connection are yet to be investigated and decided.

Dr. Fonssagrives suggests that a comparatively low degree of tempera-

ture may cause coals stowed in a ship's bunkers to give off slowly the same products which are obtained by distilling tar in the manufacture of illuminating gas, namely, carbonic acid, nitrogen, oxygen, bicarburetted hydrogen, which gases become impregnated with ammoniacal, sulphurous and tarry vapours, that are eliminated by proper treatment in the gas manufactories; but slowly eliminated and diffused in the atmosphere of the ship, they may be very detrimental to the health of those forced to respire it.

The local hygiene of different parts of a ship is minutely considered. In all ships the space beneath the lowest deck, where there are several, is called the "hold." It is in ships of war the grand reservoir for the reception and storage of water, provisions and stores of almost all kinds. In relative situation and uses it is analogous to the cellars and vaults of dwelling houses.

The hold being the lowest part of the ship is the receptacle of all water which may leak through the bottom. It is divided longitudinally by the keelson, along each side of which, arrangement is made for the flow of water from both extremes to the pump-well which is the lowest level within the vessel. The spaces between the timbers near the keelson are called the limbers, which are prone to become incumbered with detritus and dirt from various sources. These are generally organic matters, which soon ferment and give rise to gaseous emanations which more or less contaminate the atmosphere. In times past, a rope or chain was extended along through holes in the limbers properly arranged for the purpose, keeping the passage between the limbers free, by drawing them alternately fore and aft. But in modern times limber-ropes have disappeared almost entirely. The limbers are kept closely covered, and are inaccessible without removing the iron ballast, and fresh water-tanks which are made to form a tight covering for the lining of the hold.

At the bow and stern are placed powder magazines, accessible from the orlop or berth-deck. Spaces are left on each side of the magazines, termed wings, and also beneath them, which are occupied by store-rooms. Near the centre are placed the chain-lockers, shot-lockers, and shell-rooms, and toward the stern are the spirit-room and bread-rooms. Salted beef, pork, rice, sugar, &c. &c. in barrels are packed on top of the tanks with fire-wood, from which the bark has been removed prior to taking it on board.

In steamers a large part of the centre of the hold is occupied by the engines and coal bunkers, which renders the arrangement of the hold in them necessarily different from that of sailing ships. But whatever this may be, four conditions are necessary to the salubrity of the hold.

1. The storage should be so methodically combined that everything may be at hand, and require as little moving and changing as possible.

2. Hatches and windsails should be so arranged as to favour free and active ventilation.

3. Water should not be permitted to stagnate or accumulate in any part, and its removal should be made easy.

4. Provisions and stores should be packed in a manner most favourable to their preservation.

Cocks or spigots, communicating through the bottom of the ship with the sea, are placed in all public ships, through which water may be admitted for the purpose of washing and cleansing the hold, by floating every kind of detritus into the pump-well from which it may be removed.

However efficient such a contrivance may be in washing the interior of the

hold, it should be sparingly used, because the difficulty of drying the hold again after being thoroughly wet is so great that moisture lingers many days sometimes, and contributes to the process of fermentation of organic matters subject to its influence. As long as dirt is perfectly dry it is comparatively harmless, and becomes offensive only after it has been moistened. When these bilge-cocks are opened to admit sea-water, the pumps should be at the same time set in motion to remove it from the pump-well where it very speedily accumulates.

In French ships of war there is in the forward part of the hold an apartment called the "cambuse," into which are placed the rations for the day and from which they are issued to the cooks, and to which plates and cans are returned after meals to be cleansed.

The orlop-deck in ships of the line and berth-deck in frigates, sloops, and smaller vessels, is the basement story of the maritime habitation.

All hygienists agree, says Dr. Fonssagrives, that the basement of our houses are much less salubrious than the upper stories, on account of its vicinity to the ground and the less purity of the inferior strata of the atmosphere. The berth-deck of ships presents analogously, like unfavourable conditions. From their capillary porosity, its partly submerged walls derive an inevitable humidity which is augmented by water too frequently used in washing the deck, by rain, &c.; its position immediately above the hold exposes it to emanations disengaged from the latter; and the air as well as light reach it only from above downward, amidst a thousand intervening obstacles, so as to render the renewal of the interior atmosphere very difficult. The insalubrity of the berth-deck increases with the rate or size of the ship.

In ships of a single battery the after part of the berth-deck is occupied by the cabin, the ward-room in which the commissioned officers lodge and mess, the steerage for the accommodation of midshipmen, and the apartments of warrant officers, namely, boatswain, gunner, carpenter, and sailmaker. The part of this deck not assigned to the officiality of the ship is occupied by the crew. And the extreme forward part is appropriated to the hospital or sick-bey in public ships of the United States, but in the French navy a more eligible position, near the centre of the deck, or in frigates on the forward part of the gun-deck, where there is better ventilation and light, is assigned to the hospital. A half century ago, sick men seem to have been regarded in the French as well as in other navies, as useless beings, who are to be put as far out of the way as possible.

In 1810, M. Sper de Granville, a French naval surgeon, published a thesis entitled *Essai sur le Service de Santé Nautique*, in which he described the inconveniences of the forward part of the berth-deck for hospital purposes, and pointed out the superior advantages of the forward part of the gun-deck. It was objected to his views that taking that part of the ship for a hospital two guns would be thrown out of exercise; that the light left with the sick during the night would be dangerous; that smoke from the galley or kitchen, the odour of the "head," draughts of air, and humidity from sea-spray would be dangerous to the sick, and the aspect or uniform appearance of the battery would be injured. To the latter objection M. Sper replied: "What! place in competition the mere appearance of the battery with the health and even existence of men! The officer who makes such an objection manifests at once the degree of interest he is capable of taking in the welfare of the crew." In 1822, this idea of M. Sper was

fully developed by M. Le Helloco, and in 1825 the point was gained and an ordinance was issued which put the question at rest.

The galley or cooking apparatus is placed on the forward part of the berth-deck in sloops, and on the gun-deck of frigates. On the berth-deck, the galley contributes to the ventilation, and this effect more than compensates for other inconveniences its presence there occasions.

In frigates, and larger ships, a great many men sleep on the gun-decks, where they have a better atmosphere than is usually found on the berth or orlop-decks.

The upper or spar-deck is the parade ground and scene of action of the floating population, and, being exposed to the free air and light, requires little consideration from the hygienist or sanitarian.

The second book of the work of Dr. Fonssagrives is devoted to the man of the sea, and embraces recruiting, habits, vocations, and marine labours.

To determine the physical force of a crew, a *dynamometer*, which consists of an elliptical spring, acted upon by pressure, to ascertain *manual force*, and by traction, to ascertain *renal force*, or strength of back, is suggested.

A table of the results of experiments by M. Quetelet is given, the deductions from which are: 1, that muscular force increases up to forty years; 2, that renal force diminishes at an earlier age than manual force; 3, that the renal force of a seaman of fifty is equal to that of a novice of sixteen; 4, that those of slightly advanced age, or of very advanced age, equal each other in the development of muscular force.

The tables of M. Quetelet show that renal force doubles from eleven to fifteen, becomes triple between fifteen and forty, and then decreases; that manual force follows a nearly analogous progression and decadence. It is therefore desirable that the crew of a ship should not be composed of men too young; without considering nautical inexperience which is their lot, is there not danger in subjecting men whose development is not yet complete, to the hardships and crowding which are incident to navigation?

Nautical conscripts of France are required to serve between the ages of eighteen and fifty, or, at the utmost, thirty-two years, or the entire term of the full vigour of muscular force, if the deductions of M. Quetelet are reliable.

The seaman is exposed to the most varied and most vehement passions; he often passes from the most insipid monotony to the most amusing variety, from joy to sadness, from satisfaction to discontent, from calm to agitation, from idleness to painful labour, from safety to peril, from hope to despair; abundance follows want, excesses succeed privations. These emotions, by their multiplicity and activity, exhaust sensibility, and hence we see the seaman insensible and passive, when any other man would become disturbed and excited.

Sea life too is frequently destructive of family ties; our fragile and precarious affections, like everything human, are prone to diminish, and need the constant presence of those who inspire them to keep them warm; similitude of tastes, the guarantee of solid conjugal intimacy, often gives place to incongruous habits, acquired during separation; the supreme control of the family—in all that relates to the education of children, and care of their patrimony—is no longer in legitimate hands; in a word, sea life is a most absolute overturning of the harmonious system of family management. Impressible and loving natures find in this chilling of their instincts, a source of sadness, inquietude, and discouragement, which is fostered even by letters—fragile bridges thrown over the sea between the ship and domestic

hearth—and this the hygienist will not fail to consider. To listen to the heedless language of sailors, the little reverence with which they speak of things the most sacred, the facility, in some degree fortuitous, with which even on the eve of departure they contract unions, the gravity of which they little comprehend, and to see their spirit of gayety, one would suppose them to be careless, and strangers to the sorrows of absence and to family regrets; but the sagacious physician can distinguish the man under his borrowed envelop, and is not ignorant that nostalgia often selects those who would conceal it.

Drunkenness, the most ignominious of all the passions—because it enslaves body and soul, kills intelligence, extinguishes the will, and hastens decrepitude—is the sailor's curse, in which health, vigour, and the well-being of the family are foundered. And it is surely incongruous that governments should encourage this vice by contributing alcoholic stimulants as a part of the daily food of seamen, and thus create the appetite in the young, and foster it in the mature, while they enact laws to punish those who intoxicate themselves, as well as those who commit the offences which excess in drink originates. The writer believes that the abolition of the spirit ration of the navy would contribute more to the elevation and efficiency of the service than any other one act of legislation could do. The physical, moral, and intellectual diseases consequent upon the intemperate use of intoxicating drinks, are too well known to the profession to require here a quotation of the author's statements in connection with the subject.

The influence of drunkenness upon discipline is of daily observation, as shown in men exceeding their period of liberty on shore, quarrels, insubordination, &c., all effects of this vice, which has merely a temporary check in want of money, or confinement on board. Most offences being consequent upon drunkenness, there follow in its train punishments which are prejudicial to health, such as deprivation of liberty, of air, food, close confinement, &c.

Prolonged abstinence from indulgence in the genetic appetite disturbs the equilibrium of the functions; but it may be added that the inconveniences flowing from this cause are less than those which result from abuse of the sexual relations. This is especially true in warm countries, where the genital sense, stimulated beyond measure, acquires undue activity, and the economy already exhausted by overpowering heat, slowly repairs the double —humoral and nervous—expenditure which it imposes. M. Celle probably exaggerates when he declares that "sexual pleasures have certainly killed more men than drunkenness."

Syphilitic diseases are very prevalent among seamen. In the years 1852 and 1853, at Brest, out of a mean force of 1641 men, there were annually 443 venereal cases, or 26.9 per cent. In public ships of the United States, the number of cases, although considerable, bears a very much smaller proportion to the number of men.

There is another kind of genetic excess which profanes the laws of nature, and ignores the sexual duality of the species, to which our author calls attention—an excess which is extremely rare in the navy of the United States, though it is believed that among boys onanism is not unfrequent.

Many professions and labours are embraced in a ship. The officers constitute the aristocratic class of its population, a class which has its privileges of consideration and authority, and also its responsibilities, cares, and anxieties. Although Dr. Fonssagrives properly refrains from individualizing the members of this class, he feels at liberty to speak of the surgeon, the man to whom the State confides the health of the floating colony—a

detached portion of the mother-country. His duty is hard. From the moment the ship weighs her anchor, he alone has the undivided responsibility of the lives of those whom the State confides to his care In the midst of those anxieties—which an unexpected case may cause—he is deprived of recurrence to another to sustain him; his only resource is in books, the insufficiency of which is cruelly felt at critical moments. Hygiene, medicine, surgery, toxicology, legal medicine, are distinct specialities among practitioners on shore; the surgeon of a ship, under the penalty of being considered unequal to his task, in case of failure, is bound to provide for private and public prophylaxis, direct the treatment of internal diseases, be ready for great surgical operations, enlighten at need the most arduous cases of judicial medicine. He ought to be a *physician* in the broad acceptation which antiquity attached to this word; to meet the exceptional exigencies of his position, it is not enough that he shall have passed the frequent tests to which the naval surgeon is subjected, in passing through the different degrees of his hierarchy; indefatigable, constant labour alone can maintain the degree of knowledge he has painfully acquired, and his life is passed amidst the agitations of competition, the fatigues of the sea, and toil without relaxation, which conscience imposes on him as a duty. His task is difficult, under ordinary circumstances; deficiency of space, the instability of the ship, the penury—do what he may—of alimentary resources, obscurity, noise, humidity, are the opponents against which he is in constant contention. But when an epidemic appears, his difficulties increase, and are only met by increased courage and energy. That is his field of battle, where danger presents itself, without the excitement which shades, or the glory which compensates it. It belongs to others to say whether a surgeon of the navy ever recoiled through fear, and whether our corps cannot, after every such scourge, reckon with pride a duty well discharged even with the cruel losses it cost. Let us add, says Dr. Fonssagrives, that the surgeon finds compensation and a lightening of the difficulties of his ministration in the high esteem and personal consideration of which he is an object, and in the readiness with which commanders and officers second his efforts to stay the ravages of an epidemic.

The officers stand in the same relation to sailors afloat as those of the liberal professions in our cities to those who exercise mechanical trades or labour with their hands. Although they are better lodged and enjoy greater variety of food, they feel often severely the moral miseries which are inherent to navigation; separation for long periods from family and friends; incompatibility with those with whom they are closely associated in their duties; the rigid formalities of discipline; sense of responsibility, the devouring anxieties of ambition reduce the morbid aptitudes of the officer to that of the sailor and expose him to diseases, almost wholly unknown amongst the crew.

In a hygienic point of view, all the professions exercised on board ship are divided into three classes.

1. Professions exercised principally in the open air.
2. Professions exercised principally in the interior of the ship.
3. Professions exercised habitually under exposure to fires.

The professions which are exercised in the open air are those of seamen, ordinary seamen, boatmen, boys. These generally speaking are the most healthful of the vocations. In an epidemic yellow fever on board of the Herminie at Havana, the topmen furnished 25 per cent. of the patients,

while the mean of other grades was 28 per cent., and some among them, "holders" and supernumeraries, it attained 66 per cent.

Boatmen are more exposed to the causes of disease than topmen. Violent or long continued exercise in rowing often is succeeded by repose in the boat, which exposes them to be chilled in cool winds while freely perspiring; or they have to remain under the influence of a burning sun; or to wade knee-deep in water sometimes in landing on beaches. Boat-service is among the most fatiguing and insalubrious in which men are employed in the open air.

Of the second class, those who work in the hold suffer most in health. The holder is easily recognized on inspection at muster, by the pallor of his complexion, the œdematous puffiness of his cheeks, and that appearance of etiolation and general debility which a few months' sojourn in the hold are sufficient to bring. Proportionately the holders furnish nearly double the number of patients of any other vocation in the second class. This increased liability to disease is not due exclusively to the privation of pure air and light; the slow poisoning from respiring the sulphhydric miasms which are disengaged in the depths of the ship, must also be taken into account.

Our author suggests that "holders" should not be a permanent class, but should be relieved periodically and be required to sleep always in some well ventilated part of the ship; and that quinia in small quantities should be administered to them regularly as a prophylactic.

Cooks, bakers, firemen, and coal-heavers suffer in health on board ship more than men of any other class. The elevated temperature to which they are exposed augments their aptitude to disease. Acceleration of the circulation and respiration, and copious perspiration are among the immediate effects of the influence of heat, and men become anæmic and liable to affections of the heart, ophthalmias, diarrhœas, and acute diseases of the air-passages.

In the French navy there is no marine corps. It is possible that this institution may disappear from the navy of the United States, because sailors are fast becoming as expert as the marines in infantry tactics, and when they shall be, the marine corps may be advantageously transferred to the army.

Several pages are appropriated to a consideration of rest. Men on board of ships of war, besides working or manœuvering, cleaning, and provisioning the vessel, are employed in drill at the great guns and with small arms; and in some instances, health is lost sight of in the anxiety of the commander to astonish beholders by the rapidity and precision of the various drills of the crew. In the exercises of reefing, furling, sending down spars from aloft men are sometimes killed or maimed in their efforts to accomplish the work within a limited number of minutes.

In the French service the physiological fact is recognized that children and minors require longer periods of repose than adults to maintain them in health, and for this reason a regulation prohibits boys from keeping night-watches.

The subjects of clothing, lodging, and personal hygiene are treated in the second chapter of the second book.

The French sailor's sack or clothing outfit required by the government is thus stated.

Quantity.	Articles.	Cost of each.	Total cost.	Estimated duration.
		fr. c.	fr. c.	months.
2	Cloth jackets	14 75	29 50	18
1	Loose sack (cabau)	23 55	23 55	30
2	Cloth pantaloons	11 65	23 30	12
2	White linen pantaloons (duck)	3 75	7 50	9
2	Fatigue trowsers, linen	3 55	7 10	12
1	Jumper (vareuse)	3 40	3 40	18
1	Pair of gaiters, white linen	1 15	1 15	6
4	Shirts, white linen	2 95	11 80	6
1	Swanskin shirt	6 45	6 45	18
1	Large sack	2 20	2 20	36
1	Small sack	1 80	1 80	36
1	Fatigue cap	2 45	2 45	12
2	Pairs woollen stockings	2 40	4 80	9
2	Pairs of shoes	5 10	10 20	4
1	Pair jugulars	10	10	12
1	Woollen neck-cloth	1 45	1 45	18
1	Lasting neck-cloth	1 45	1 45	12
1	Clothes' brush	35	35	36
1	Scrub-brush	35	35	12
1	Shoe-brush	35	35	24
			139 25	

The cost of this entire outfit of clothing is $26.46.

Dr. Fonssagrives urges that under flannel vests and drawers should be added to this outfit and that cotton should be substituted for linen shirts, which should be made in such manner as to protect the chest.

Between officers of the line and medical officers there is always a discussion whether shoes should or should not be worn by sailors on board ship. Our author insists the shoes should be worn.

He also remarks that the short jacket is a cause of lumbago, because between its bottom and the waistband of the trowsers there is a space through which the shirt appears, and at that point the back is comparatively unprotected. For this reason, he suggests the wearing of a red flannel belt or sash of several turns around the body for the protection of the loins. He recommends a straw hat in place of the stiff-glazed or waxed black hat worn by French sailors, which is uncomfortable and unsightly; and that the uniform caps worn by officers should be provided with vizors, broad enough and long enough to shield the eyes from glare of light, and to shade the nose from the sun. He condemns the cocked-hat *in toto*.

The outfit of the sailor in the navy of the United States is much more in conformity to the laws of hygiene. It is as follows:—

1 pea-jacket	$11 00	1 seamless cap	1 00
1 blue cloth trowsers	3 39	1 black silk handkerchief	1 00
1 blue flannel overshirt	1 60	1 mattress, hair	4 90
2 under-flannel shirts	2 32	2 blankets	3 90
2 woollen draws	2 16		$31 27

The bedding of the sailor consists of a hammock, mattress, and blankets; pillows and sheets are very rarely included. The hammock is an oblong piece of canvas of appropriate dimensions, which is suspended by small lines or cords, attached to each of its ends, from which they converge to be secured to a hook in a beam of the deck above. The hammock, containing the mattress and blankets, constitutes the sailor's lodging or sleeping

apparel, where he lies, almost always parallel with the surface of the sea, undisturbed by the rolling of the ship, and not much affected by the pitching, to dream away his "watch below." The hammocks are rolled up in the morning, and stowed for the day around the top of the ship's sides, in a sort of trough, termed the "hammock nettings."

The writer once served in a large frigate where the captain caused the hammocks to be used in common by the two "watches" into which a crew is divided: the hammocks of one watch only were allowed to be hung up at night, and the men who had completed a four hours' watch on deck, occupied the beds just left by those who relieved them, and to equalize the wear and tear of bedding, the hammocks which were hung up one night, were left in the nettings the next. Independently of the objections of a hygienic nature to such a practice, the individuality of men is thus ignored, and they must feel themselves lessened in their self-respect, which for the sake of discipline and general morals of a ship's company, ought to be fostered. Under such a system, a man's bed virtually ceased to be his own property; he was required to share it alternately, first with one and then with another.

The nautical cot is an English invention. It consists of an oblong bag of canvas, stretched over a horizontal wooden frame, so that it has the advantage of a flat surface for the mattress to repose upon, and being suspended like the hammock, yields readily to the motions of the ship. It is useful for the sick, but less so than immovable iron bedsteads, because the canvas sides and ends of the cot obstruct ventilation.

Personal cleanliness is strongly insisted upon. In the social condition neglect of personal cleanliness, by contributing to the mephitism of the air in a ship, becomes detrimental to the health of those with whom one lives. Unfortunately, the scarcity of fresh water on board ships limits sailors to sea-water for their ablutions, which are too generally confined to those parts of the body which are habitually uncovered. The use of tooth-brushes is almost unknown among seamen. Bathing of the entire body is not frequent. Dr. Fonssagrives suggests that in steamers some arrangement might be made to enable every man to have a fresh-water bath once every two or three months.

Our author considers that the moustache and beard should be worn as a protection against vicissitudes of temperature in their influence upon the teeth and respiratory passages.

Washing of clothes on board ship is imperfect. The operation consists in spreading the soiled garment on the deck, smearing it well with soap, and then scrubbing it with a brush, after which it is rinsed in sea-water and exposed to the air to dry. But there is always left in the tissue a deposit of hygrometric saline matter, which prevents it from becoming perfectly free from humidity. The whole system of clothes' washing is objectionable on many accounts besides that just alluded to, and in this connection Dr. Fonssagrives offers a suggestion which the writer would be pleased to see put in practice in the navy of the United States. He submits that at small cost, an apparatus might be placed in every steamer, by means of which washing for the whole crew might be effected by steam. It would be necessary only to provide a metallic box, say four or five feet cube, into which steam could be admitted. Into this box, the soiled clothing, previously steeped a few hours in a weak, alkaline solution, would be placed, and then subjected to the hot vapour. After this it would need to be rinsed, and then the water might be removed by pressure, and then exposed to dry,

either in the open air, or in a metallic case suitably arranged, to be heated from the boiler of the engine.

An apparatus of the kind suggested—such as are in use in many hotels—would contribute largely to the comfort and health of the crews of steamers.

The third book treats of nautical influences: the oscillations of the ship from impulse of waves, or rolling and pitching motions, causing sea-sickness, and originating a proclivity to constipation—the influence on the nervous system and on the organ of hearing, of vibrations, caused in ships of war by detonation of guns, by drums and musical bands, the shouting of orders through speaking-trumpets, the conversational noises of a crowd, and the rushing of the wind—are carefully noticed in the first chapter. The second chapter is devoted to a consideration of the composition, temperature and hygrometry of the nautical atmosphere.

The normal composition of the atmosphere by weight is,

Oxygen	23.015
Nitrogen	76.990

besides, carbonic acid from 0.0003 to 0.0006, traces of ammonia, iodine, and a variable quantity of aqueous vapour. Expired air is represented by

Nitrogen	75.2
Oxygen	17.0
Carbonic acid	5.9
Aqueous vapour	19.0

By the act of respiration, the air loses oxygen and nitrogen, and acquires aqueous vapour and carbonic acid; so that confined air, respired by any considerable number of men, or other animals, is greatly vitiated in a very short time.

Applying these data to the atmosphere of the interior of a vessel we find, in a ship-of-the-line of three decks, with the war complement of 1087 men, the entire crew resting five hours "below," by alternation of their watches, that:—

1. 40 grammes of aqueous vapour, 10 of which are derived from pulmonary exhalation, and 30 from cutaneous perspiration, are exhaled every hour by each man, which makes for the entire crew in five hours, 217.400 kilo., or about 580 lbs. Troy.

2. Each man exhaling hourly, 41.43 grammes of carbonic acid, the crew of the same vessel would expire, during the night, 225.172 kilo., or about 600 lbs. Troy of this gas.

3. An adult man absorbs, on an average, 700 grammes of air every hour: in five hours this crew of 1087 men, will absorb 3804.50 kilo., and deprive the air of 228.840 kilo., or about 610 lbs. Troy of oxygen.

4. The 1087 men take from the 3804.50 kilo. of air which they respire during the night, 6.467 kilo. of nitrogen—more than 17 lbs. Troy.

The chemical change of the air in the interior of the vessel during ten hours of night for the crew, or five hours for each half of it, is thus summed:—

Exhalation of	217.400 kilo.	of water
"	225.172 "	of carbonic acid
Absorption of	228.840 "	of oxygen
"	6.467 "	of nitrogen.

It is scarcely necessary to add that sulphurous, ammoniacal, and acid products derived from various animal dejections, miasms furnished by the insensible fermentation of the organic materials constituting the structure of the ship, or resulting from the decomposition of substances supplied as

"stores," are so many sources of aërial vitiation which chemical analysis does not reveal; but of these the sense of smell and health are trustworthy re-agents.

Until a recent date, it was usual to attribute all the evils of crowding men to the accumulation of carbonic acid in a confined atmosphere, but, although experiment has proved that carbonic acid when respired is a poison, it is evident, from the proportional quantity being so very small, and equally distributed throughout, under the law of diffusion of gases, that carbonic acid alone is not the cause of the insalubrity of a confined atmosphere.

It has just been stated that 3804.50 kilo. of air are necessary for the respiration of the crew of a three-decked ship, during five hours at night, sleeping below. Now, a cubic metre of air weighing 1226.00 grammes, these 3408.50 kilo are equal to 3103 cubic metres of air. Therefore 3103 cubic metres of air are required on the lower decks of a ship of the first class for the proper respiration of her crew. If she is sufficiently spacious to furnish the crew this amount of air, we may conclude that ventilation is unnecessary; but if, on the contrary, we find a manifest insufficiency of space, an opposite conclusion is inevitable.

The cubage, or cubic space of the three decks of a ship of the line (the orlop is not ordinarily inhabited by the crew in vessels of this class) is 3089.369 metres, from which is to be deducted the cubage of the bodies of individuals (1087×0.64 metres)—it is ascertained that the human body on an average displaces 64.24 litres of water—or 69.568 metres; the cubage of 96 cannons with their carriages, equal to 96.00 metres; the atmospheres circumscribed by partitions and taken from the common atmosphere (ward-room, cabin, hospital, &c.); the cubage of various objects on those lower decks, estimated at about 1,000 cubic metres, making an aggregate of 1165.568 cubic metres. These being deducted, we have 2823.801 metres instead of 3103, necessary to supply the demand of respiration.

These figures demonstrate a necessity for an active ventilation. In this calculation deficiency of air only is considered; but the accumulation of carbonic acid, and of miasms due to absence of its renewal, constitute a condition of mephitism which should not be forgotten.

In view of the fact that atmospheric air is the only substance without which a man cannot live three entire minutes, it is remarkable that so little attention is given to securing a sufficient supply of it on board ships of war, while every care is taken to secure potable water, food, clothing, sleep, without any or all of which a man can survive entire days.

The high temperature in the interior of ships, is not one of the least causes of the insalubrity of their atmosphere. It should be studied separately in sailing ships and steamers; the subject has not yet received the attention it merits. The temperatures of different parts of the ship, and of the external air at the same hours for comparison have not been observed to a sufficient extent to establish any satisfactory conclusions beyond the general fact that the thermometer stands higher on the orlop and in the hold, than upon the gun-decks of ships of the line.

Many causes conjoin to render a ship a centre of humidity. Porosity of the material of construction, a large part of which is submerged; imperfect closing of her seams or joints; penetration of water into the minute canals of the wood, under the influence of the peripheric pressure of the sea on the ship; the accumulation of a considerable number of living beings in a small space (the crew of a ship of the line exhales in a single night 217.400 kilo of aqueous vapour); the preservation of a large quantity of fresh water in vessels imperfectly closed; spray cast aboard from the sea;

age of the vessel—if new, the wood contains more of the water of vegetation, if old, she leaks more; frequent washings of the decks; the humidity of the pelagic atmosphere, hindering the evaporation of moisture accumulated within the ship; in equatorial regions the hygrometric condition of the atmosphere almost constantly approaches saturation.

The conditions of old ships are favourable to humidity, and hence it is that mould and cryptogamic growths of various kinds appear on board of them, in preference to newly constructed vessels.

Humidity is regarded to be among the most active causes of scurvy. All agree that a humid atmosphere is insalubrious, probably because it retards the natural depuration through the skin.

The prophylactic measures recommended are free ventilation; frequent airing of clothes and bedding; rubbing the wood work below decks with dry cloths, &c. And we may suggest that covering the whole berth deck with oil-cloth, similar to that employed in the ward rooms of steamers and other ships, would go far towards obviating humidity below the decks.

The third chapter of this book treats of crowding, infection, contagion and nautical epidemics.

Salubrity of a space is in a measure proportional to the density of its population. Typhus, or ship fever, is attributed to crowding.

Our author defines infection to be aërial contamination from miasm or effluvia which produces disease; it should be carefully distinguished from contagion.

1. Contagion is a peculiar animal principle which is a result of a morbid elaboration, a pathological ovule, which, introduced into a healthy organism, develops a disease analogous to that which produced it. Infection, on the contrary, requires for its manifestation the chemical disaggregation of organic substances, vegetable or animal. Contagion is a pathological poison; infection is a chemical poison; infections become extinguished in the organism in which it germinates, but contagion fructifies there.

2. The first origin of contagion is unknown, but it is rational to suppose that it would be produced only by a spontaneous generation or a metamorphosis of infection.

3. Although there are idiosyncracies which are refractory to the influence of contagion, they are fewer than those which resist infection; *pathological poison* is more general than *chemical poison*.

4. Although long periods of incubation of infectious diseases are cited, we may say, however, that the incubation of contagious diseases ordinarily exceeds those limits.

5. Contagion seems to be transmitted in preference by material communication (contact), infection is transmitted in preference by aërial dissemination. Sometimes, however, contagion is transmitted through the air (smallpox); sometimes also infection is transmitted by contact (putrid infections, corrupted water).

6. Contagion invades successively and by a generally observable filiation, individuals exposed to it; infection on the contrary, impregnates at once and simultaneously most persons submitted to its influence.

7. The propagation of contagion is independent of atmospheric conditions; it is probably in proportion to the completeness of the approximation of the morbiparous organism to the sound organism. The propagation of infection, on the contrary, is subordinate to local circumstances (winds, climate, temperature), which accelerate or retard its diffusion.

8. Contagion generally attacks the same individual only once; infection, on the contrary, does not protect the organism against a new invasion.

9. Contagion may act, by transportation, at considerable distances from the point of primitive departure; but infection does not extend its action beyond a limited radius.

There are four sources of infection; 1. Vegetable disaggregation, or phyto-hæmic infection; 2. Animal putrefaction or necro-hæmic infection; 3. Emanations from diseased organisms, or noso-hæmic infection; 4. Emanations from healthy organisms crowded into a too narrow space, or zoo-hæmic infection.

Phyto-hæmic[1] infection, as its name indicates, proceeds from the introduction into the economy of effluvia disengaged by putrefying vegetable matters.

Marshes are the prolific source of these effluvia, from which originate in hot climates a group of affections so vast and so acute that it has been said that the study of paludal diseases is a key to the pathology of those regions.

It is reasonable that we should find phyto-hæmic infection on board of ships, where an enormous mass of vegetable substance is an incessant site of a silent process of putrid fermentation. If we compare the uncovered marsh with the nautical marsh, we shall find all the circumstances which make the perniciousness of the first united in the hold of a vessel.

The mixture of fresh and salt water is particularly insalubrious; it is this mixture which makes the danger from marshes which improvement has abandoned; it is this mixture also which explains the deleterious influence of the mouths of great rivers in America and Africa; now, the hold is necessarily steeped in brackish water, and hence, there is a most abundant production of paludal emanations.

The moving of a marshy soil augments the diffusion of its effluvia, and so the oscillations of the ship under the influence of waves and storms often reveal the presence of an oceanic infection previously inactive.

To the phyto-hæmic infection are attributed intermittent fevers of various types, remittent fevers, continued fevers, and possibly yellow fever.

Necro-hæmic[2] infection is the morbiparous principle which proceeds from the decomposition of animal matters deprived of life.

The absorption of this principle is capable of producing diseases of very grave character. On board ships necro-hæmic infection frequently arises from putrid decomposition of viands (preserved fresh or by salt), and especially from the pullulation of parasites which fill the hold with their cadavers and deposit there the germs of an inevitable corruption.

Among these ship parasites are cockroaches, rats, and xylophagous animals. The fecundity of cockroaches, as well as of rats, is very great, and at times they become so numerous that it is necessary to suffocate them in mass by sulphur-fumes or otherwise, or abandon the vessel.

Noso-hæmic[3] infection proceeds from crowding sick persons together. The noso-hæmic infection seems to give origin to hospital gangrene, malignant erysipelas, and purulent affections.

Zoo-hæmic[4] infection results from the crowding of living beings, men or inferior animals. Ships carrying passengers or mules, horses, cattle of any

[1] Derived from φυτὸν, plant, and αἷμα, blood.

[2] From νεκρος, dead, and αἷμα, blood; poisoning by cadaveric miasms.

[3] From νόσος, patient, and αἷμα, blood; infection produced by accumulating sick persons in narrow limits.

[4] From ζωον, animal, and αἷμα, blood; infection produced by crowding together living beings, men, or lower animals.

kind in numbers largely in excess over the requisite space for their accommodation, are liable to diseases from this infection.

Our author presents a summary of the four species of nautic infection, and the diseases attributable to each.

1. *Phyto-hæmic infection.*—Intermittent and remittent fevers, simple or pernicious. Paludal cachexia. Vegetable colic. Yellow fever (?).

2. *Necro-hæmic infection.*—Epidemic dysentery. Certain furunculous eruptions.

3. *Noso-hæmic infection.*—Malignant erysipelas. Phlebitis. Purulent infection. Hospital gangrene.

4. *Zoo-hæmic infection.*—Typhus. Typhoid fevers. Typhoid complications of ordinary diseases.

The prophylactic measures recommended are a rigorous observance of the rules of hygiene, and the use of protective medicines, such as small doses of quinine, wine of bark, &c.

We must pass over his observations on contagion and epidemy without remark.

The subject of rendering ships more healthy is discussed in the fourth chapter of this book.

Ventilation and various plans and contrivances proposed for the aëration of ships are noticed somewhat in detail. In spite of them all, Dr. Fonssagrives seems to think that atmospheric air is doled out to the crew most parsimoniously, while efforts are made to secure supplies of every kind of aliment in ample quantities. Viands, drinks, clothing, may be unexceptionable in quantity and quality, and fail to maintain the vigour and health of men forced to respire an atmosphere deficient in the quantity and quality of those properties which are essential to perfect respiration. Naval constructors seem not to recognize the importance of ventilation of ships; our author's course of reasoning suggests a notion that if port-holes were not essential for the accommodation of guns, and hatches convenient for transfering ammunition to them from the magazines below, there would be no passages provided for the admission of air and light into the interior of the ship.

It is time, says our author, to apply to the objects of naval hygiene the processes of aëration which general hygiene has created, and to ascertain, through the scientific data, which she places before us, in what degree, and by what means the internal air of ships should be renewed.

Dr. Fonssagrives estimates that fresh air should be supplied in the sleeping places of a ship at the rate of 20 cubic metres hourly for every man. He suggests ventilation by aspiration, and that great numbers of air-tubes should be introduced into the structure of the vessel, which should communicate with the hold and berth-deck from the spar-deck, so arranged as to favour a free circulation in the interior of the ship; and that in steamers some contrivance should be connected with the engines to force fresh air into lower parts of the vessel.

He recommends the use of disinfectants, but believes they will be rarely needed where ventilation is sufficient.

Deficiency of light is detrimental to health, and for this reason he suggests the free use of thick glass in the upper deck, and that, where daylight cannot be conveyed below, artificial light from lamps and candles is useful.

The cleansing of ships is treated in detail. He advocates rubbing the lower decks clean with dry sand, or by the process known as dry "holy-

stoning." Although the voice of naval surgeons is almost unanimous against washing the berth-deck more than once in a week or in two weeks, on board of many ships it is daily deluged with water, under a pretext of making it clean and wholesome. A thorough waxing and dry polishing of the berth deck has been suggested, but an oil-cloth covering would better serve the purposes of preserving the health of the ship's company.

Considerable space is devoted to the consideration of the comparative healthiness of different kinds of ships. The conclusions from the statistics are, that sailing ships are very much more salubrious than steamers, and that sickness and mortality augment with the dimensions of the vessel, no matter whether moved by sails or steam.

The fourth book of this treatise is occupied with a statement of the influences on health, which are external to the ship. We cannot follow our author in his observations on the condition of the pelagic atmosphere, its temperature, humidity, and saline properties, nor stop to note his statements about ocean currents, storms, climate, and atmospheric electricity. He treats all these points, not profoundly, though at considerable length.

Nautic Bromatology is the title of the fifth book. Here the author remarks upon the different kinds of potable water—spring, rain, and river, and that resulting from the melting of ice, and of snow. The composition of water, the modes of preserving it on ship-board, water filters, distilled water, and several distilling apparatus are described. Next, there are essays upon French wines, including analysis, modes of detecting sophistications as well as preserving them; French and other brandies; cider and beer; full histories of chocolate, tea, and coffee, with figures of the plants which produce them. Vinegar, lemonade, and lime-juice receive each a brief notice.

Solid food is classified into feculent, sarcose or fleshy, and fatty aliments; condiments close the list.

Under the head of feculent aliments, which are less putrescible than animal substances, we have short essays on flour from different sources; its sophistications, the properties and characters of good flour; panification; biscuit and bread-making machines; the preservation of bread from mould and insects; rice-fecula; tapioca; vermicelli; dried beans, peas; the lentil or *Ervum lens*, from which are derived the *Ervalenta Wharton* and *Revalenta arabica;* pressed and desiccated vegetables.

The sarcose aliments, or viands, include beef, pork, mutton, &c. Speaking of the mode of slaughtering and butchering beef cattle, he states that an ox yields from 54 to 57 per cent. of its living weight in meat, and that the average weight of bullocks of different countries varies from 89 to 269 kilogrammes.

Under the head of preserved viands we have notices of the *carne seca, tasajo*, pemmican, tablets of boiled meat, pastils of izmazome; smoked meats, salted and pickled meats; conserves in vinegar, fatty substances, and in oil, charcoal, and brine. Our author prefers salted pork to beef, which he thinks might be advantageously reduced in quantity, or totally omitted from the seaman's ration. It is well known that beef packed for the use of our navy gradually and progressively indurates with age, and after three or four years, loses its nutritive qualities in a very great degree. The animal tissue seems to form a compound with the salt, partaking somewhat in appearance, at least, a chemical character. Indeed, salt merely retards but does not absolutely prevent the decomposition of animal tissue, as the records of the government exhibit in the quantities annually condemned to be thrown away.

The fatty aliments include milk and cheese; and under the head of condiments our author places salt, vinegar, lime-juice, peppers, mustard, spices, sugar, olive oil, butter, &c.

M. F. urges that variety in the nautical ration is more essential to health than quantity or even quality, and that the appointed hours of meals should be different. He suggests that six o'clock in the morning for breakfast, eleven A. M. for dinner, and six P. M. for supper would be better adapted to seamen than eight, twelve, and four o'clock for those meals. Those who are called to the midwatch (from midnight till four o'clock A. M.) might have furnished to them a light repast, a biscuit and coffee, for example, advantageously to health.

The elementary composition of the ration and the modes of preparing or cooking it are duly noticed. The book ends with notices of certain tropical fruits, poisonous animals, fish, &c. Speaking of antiscorbutics, he remarks that scurvy has its cause in many combined circumstances; in vitiated or insufficient air; in a long privation of telluric influences; in depressing passions, as well as in imperfect alimentation; and, consequently, there is, properly speaking, no antiscorbutic, as there is an antisyphilitic medicine. The remedy for scurvy is found in all favourable hygienic influences, just as its cause is found in all hygienic influences which are unfavourable to health. And so true is this that different elements of hygiene have been in turn and rightfully accused with the production of different epidemics of nautical scurvy. How often have we seen ships, but little crowded, pay their tribute to scurvy because they had long been without fresh provisions. How often, on the contrary, have we seen an abundance of fresh vegetables fail to prevent the scourge under hygienic circumstances in other respects unfavourable. Two vessels upon the same station, supplied in the same manner; the crew of one, under a mild and paternal discipline, finds in its cheerfulness an effective element of resistance; the crew of the other languishes in nostalgic torpor, and scurvy decimates it. This comparison is not a fiction, but an actual observation. Let no one suppose, however, that we seek to undervalue the influence of a badly constituted or insufficient alimentation in the production of scurvy; no one appreciates more fully than we do, this etiologic element, but we are unwilling to attribute to it or to any other an exclusive action which does not pertain to it. Scurvy is a grave perversion of the nutritive function; nutrition owes its integrity and its deviations to other causes than to the materials of food; all external and moral influences co-operate simultaneously, and in them all we must seek both for the cause and remedy of scurvy at the same time; and ventilation, disencumbering, drying the ship, abbreviating cruises, frequent returns to port, mildness of the disciplinary yoke, cheerfulness, frequent reception of news and letters, are the *antiscorbutics* which, in our opinion, have more curative efficacy than the cress, cochlearia, lime-juice, or the salts of potassa.

Nutrition always suffers, whatever may be its alimentary resources in other respects, *if its elements are long removed from the influence of life.* There is in blood which has just lived, as in sap which has just circulated, an analeptic and restorative power which nothing can replace. Fresh or *recent* viands and vegetables are the two antidotes to scurvy; its appearance is imminent whenever they are long wanting. It must not be forgotten that from the moment life abandons an organic alimentary substance, chemical force takes its place; its molecular operations, silent, hidden, slow but real, produce changes which health wonderfully appreciates long before the gross limit of commencing putrefaction which alone strikes our senses.

The most perfect conserves are in this category; their chemical condition is not that of fresh aliment, and nutrition quickly perceives it. Here is the part which must be referred to aliments in the production of scurvy; insufficient though *fresh* nutriment will beget anæmia; a sufficient nutriment but in the process of slow chemical decomposition will engender scurvy.

If such is one of the sources of the scourge of ships, we should take every care to combat it, by diversifying as much as possible the monotony of preserved vegetables and viands by green vegetables and fresh meats, the only alimentary antiscorbutics which we recognize. The seaman's ration is richer, more reparative than is necessary to maintain his health and strength. How comes it then that it is not sufficient? It is not that he needs only so many equivalents of nitrogen or carbon daily, but especially demands that these elements may have chemical groupings which approximate those which they held during the *life* of the alimentary substances. It is in this the ration fails, and which we should give to it as frequently as possible.

The extreme hygienic importance of supplying to crews in port the fresh meat of mammals or fishes is insisted upon. Green vegetables are not less indispensable, and instinct very often induces sailors to seek with avidity this food, even in defiance of a normal repugnance. Whalemen eat with relish raw potatoes, the leaves of the least edible vegetables; those which have no green part are unsavory to the sailor thirsting for vegetable sap.

The sixth and last book into which the work is divided is devoted to the moral influences to which sea-faring people are subjected.

Separation from friends, and the rupture of habits and of affections, forced approximation with strangers who may not be congenial are special influences on nautical life, from which may arise weariness, hypochondria and nostalgia. Each of these is duly treated. The influence of the passions, emotional maladies, amusements, discipline, punishments, authority and obedience on board ship are separately considered, but the writer has already exceeded the limits he proposed to himself in preparing a sketch of the contents of this volume, which he recommends to the study of nautical practitioners. The work is perhaps chargeable with prolixity and an over ambitious style, but the fulness of detail, and the many bibliographic references it contains compensate for these faults. W. S. W. R.

ART. XIII.—*Clinical Essays.* By BENJAMIN W. RICHARDSON, M. A., M. D., Senior Physician to the Royal Infirmary for Diseases of the Chest. Vol. I. JOHN CHURCHILL, 1862. 8vo.: pp. 272.

Dr. RICHARDSON'S name is familiar to medical readers on this side of the Atlantic, as the author of a work on the *Cause of the Coagulation of the Blood*, which gained the Astley Cooper prize, for 1856. This work has been reviewed by an able hand, in a former number of this Journal.[1] Dr. Richardson's explanation of the liquid state of fibrin in the blood, viz., that it is due to the presence of ammonia, if true, has important practical applications, and, in the work referred to, subjects of much importance, in a practical point of view, are incidentally introduced; we may mention par-

[1] Number for July, 1858, p. 139 *et seq.*

ticularly the production of endocarditis, by injecting a solution of lactic acid into the peritoneal cavity of the dog, and the occurrence of fibrinous coagula within the cavities of the heart, in the course of various diseases. A perusal of the work could not fail to impress the reader with the belief that the author is a zealous, pains-taking worker, anxious to extend the boundaries of our knowledge, and improve the resources of our art. Such a man is not likely to rest satisfied with the production of a single work, and we have now the first of a prospective series of volumes, to consist of essays relating to the various departments of medical science. He proposes to issue, under the title of the *Asclepiad*, a half-yearly or yearly volume, like the one now published.

The present volume contains seven essays on subjects having no special relation to each other. The first essay is on *Subclavian Murmur;* the second is on *A Diseased Condition of the Nails;* the third is on *Reduplication of the Second Sound of the Heart;* the fourth is entitled *Contributions towards a more perfect Clinical History of Scarlet Fever;* the fifth is on *Pulsatile Pulmonic Crepitation;* the sixth is on *Uræmic Coma*, and the seventh is on *Cardiac Apnœa.* We propose to review these several essays, with such brief comments as may suggest themselves.

Subclavian Murmur.—It is well known to auscultators that a bellows murmur, synchronous with the ventricular systole, is occasionally heard when the stethoscope is applied in the infra-clavicular region, over the subclavian artery. It is also well known that this may be a sign of aneurism, of tubercle, or of anæmia. We have met this murmur repeatedly, when neither of the conditions just named were present. In order to obtain data for conclusions respecting its causation and bearings on practice, Dr. Richardson examined two thousand patients with reference to its existence. It was well marked in 51 cases, or 2.55 per cent. Of these 51 cases, 48 were males, and only 3 females. It was not found in any patient under 18 years of age, although many children were included among the patients examined.

Among the cases examined were represented a great variety of diseases. Of the cases which furnished the murmur, the larger number (18) were cases of chronic bronchitis. Phthisis existed in 12 cases; anæmia in 10 cases; dyspepsia in 7 cases, and disease of the heart in 3 cases.

An analysis of the 51 cases, with reference to occupation, furnished a curious result. In the majority of cases the patients were cabinet-makers, carpenters, sawyers, or engaged in other manual labours, in the exercise of which their arms were thrown forwards and downwards. This result did not depend on these classes of labourers forming a majority of the whole number of patients examined, for an analysis of the latter showed a larger number of tailors than cabinet-makers, more clerks than tailors, and more sempstresses than clerks. Subsequently, Dr. Richardson collected eight cabinet-makers, who were quite well, and found that all of them presented the murmur.

"Blending, therefore," he remarks, "these facts with those which tell us how rare the murmur is in women, and that it is absent in children, I am driven to the inference that particular mechanical actions of the arms, long continued, have an influence in producing the peculiar sound."

Dr. Richardson has observed that the murmur is liable to be affected by the movements of the arm. The sound is at its minimum of intensity when the position of the arm is nearly down by the side of the patient;

the maximum of intensity is obtained when the arm is slightly raised above the right angle to the body, and varying gradations are produced by movements between these extremes. It is also liable to be affected by the respiratory movements. It may be developed by a moderately full inspiration. A very deep inspiration may either intensify, or stop it. A prolonged expiration will often remove it. A fremitus is sometimes felt by placing the finger over the artery at the point where the murmur is heard.

Practically, the facts concerning a subclavian murmur are important with reference to its value as a sign of aneurism and tubercle. The author states that he has met with four instances in which the murmur was set down as aneurismal. We have met with an instance in which the murmur, being notably loud and rough, suspicion of aneurism existed, and in this case an autopsy showed no disease of the artery, the heart, or the lungs; the patient was intensely anæmic. It is certain that an arterial murmur alone should never, in any situation, be considered as adequate evidence of aneurism. Other signs or symptoms must be conjoined to warrant a diagnosis. And, on the other hand, it may be well to remind the reader that absence of murmur is by no means proof that aneurism does not exist. A murmur in aneurism is frequently wanting. We have reason to think that this fact is not as generally known as it should be.

As a sign of phthisis, a subclavian murmur may have some value as one of the incidental or accessory signs to be brought to bear on the diagnosis of that affection. Yet, in itself, it has very little diagnostic value. Dr. Richardson's observations show this conclusively, and in this respect they are valuable. We have repeatedly met with this murmur in examinations of the healthy chest, in persons not anæmic. Its value as a sign of phthisis depends on the co-existence of other signs, and of symptoms pointing to that affection. In combination with other signs, a certain amount of significance belongs to it.

It is evident that a murmur in the subclavian artery is of no value as a sign of either aneurism or tubercle, when it depends on anæmia, and when it is propagated from the heart. It may be considered as an anæmic murmur whenever a co-existing murmur is found in the carotids, and, still more, if the venous hum be present. It may be considered as a propagated murmur whenever it resembles in pitch and quality a co-existing aortic murmur.

On a Diseased Condition of the Nails.—In this essay the author gives an account of three cases of an affection known by French writers as "psoriasis of the nails." The affection is characterized by a dirty glazed discolouration, followed by "crumbling down of the nail-structure from the edges of the free margin, with more or less of irregularity, thickening from the under part, cupped surface, depression, and looseness." In two of the cases there was a pre-existent syphilitic taint, and in two cases the skin was affected with a scaly eruption. In two of the cases Fowler's solution appeared to be useful.

On Reduplication of the Second Sound of the Heart.—The author reports a single case of reduplication of the second sound of the heart, and is led to the conclusion that it must be produced by "a want of simultaneous action in the aortic and pulmonary semilunar valves." Although he makes no reference to this explanation as having been offered by others, he is, of course, aware that it is the explanation now generally adopted. The credit of having first offered the explanation is, we believe, due to a French

writer, M. Pressat. Bouilland, who first pointed out the occurrence of reduplication, at first explained it by supposing that the systolic contraction of the ventricles, instead of taking place in a continuous manner, was interrupted, or divided into two acts. Subsequently he adopted the commonly received explanation.

Dr. Richardson has not met with an example of reduplication of the first sound, but he states that others have done so. We have met with instances in which the first sound alone appeared to be doubled, and in which both sounds were reduplicated. Reduplication of the second sound is undoubtedly the variety most frequently met with. In point of fact, we suppose that neither the first or the second sound is ever doubled alone; in other words, both sounds must be doubled, but we may be able to distinguish only the reduplicated first or second sound, generally the latter. The reason for the actual reduplication of both sounds, whenever one is doubled, is obvious. The aberration proceeds from want of synchronism in the ventricular contractions. Now, this want of synchronism must, of course, affect equally the auricular and the semilunar valves.

The mitral and tricuspid valves, as well as the aortic and pulmonic, cannot act in unison. But why is it that the reduplication of the first sound is not as frequently perceived as that of the second sound? The answer to this question involves a correct explanation of the mechanism of the first sound of the heart.

Dr. Richardson is of opinion that the first sound is produced by the tension of the mitral and tricuspid valves. That it is so in part, is undoubtedly true; but another sound is combined with this, viz., that produced by the impulsion of the apex against the thoracic walls. This is susceptible of demonstration, as we have shown.[1] Now, when the ventricles fail to contract in unison, the element of impulsion in the first sound is likely to be weakened, or wanting, and the sound which remains, viz., that produced by the tension of the mitral and tricuspid valves, is feebler than the second sound. The second sound, under these circumstances, becomes the louder or accentuated sound, even directly over the apex. Subdividing the first sound still farther into the mitral and tricuspid, each being produced separately, it is easy to understand that one may fail to reach the ear, viz., the tricuspid sound. This is the reason of the apparent want of reduplication of first sound, when the second is reduplicated. We say *apparent* want of reduplication; it is really reduplicated, although the fact be not appreciable. But we believe in most cases in which the second sound is doubled, the first sound will be found to be also doubled, if auscultation be practised in the proper place. The reduplication of the second sound is best heard at the base of the heart, although it may be appreciable over the whole præcordia. The reduplication of the first sound may be heard within the situation of the apex, between the point of apex-beat and the right border of the heart, and not be discoverable elsewhere than in this situation.

In the case related by the author there coexisted great sense of oppression in the chest, dyspnœa, and lividity, and prompt relief was obtained by a warm bath. Reduplication, however, is not always associated with these symptoms. It occurs in connection with various affections, and it may or may not be incidental to some organic lesion.

Contributions towards a more perfect Clinical History of Scarlet Fever.—Scarlet fever has been considered as very rarely occurring in babes

[1] Prize Essay, Am. Med. Association Transactions for 1858.

at the breast and children under two years of age. The author shows this opinion to be not altogether correct. Of 431 cases collected from different sources fifteen were under two years of age. An examination of the mortality tables of the Registrar General shows that out of a total of 12,962 deaths from scarlet fever in children under five years of age occurring in the county of Kent in 1843, in London in 1845, 1846, and 1848, and in England in 1847, the number of cases under one year amounted to 1289, and the number between one and two years 2874, making the total under two years 4163. Statistics show that the disease most frequently occurs in the third and fourth years of life, that it declines rapidly after the fifth year, and that after forty the exemption from liability to it is almost complete. The susceptibility of the system to a special poison at one period of life, and the loss of this susceptibility at another period belong among the many mysterious facts relating to the living body, which at present we can only wonder at without attempting an explanation.

From statistical data, Dr. Richardson deduces the conclusions that sex has no influence predisposing or otherwise on scarlet fever; and that the disease is most prevalent in Great Britain in the months of October, November and December.

The author has known the disease to occur twice in the same patient and states that he has himself suffered from the disease three times. That exceptionally the disease recurs not only once but repeatedly must be considered as well established. It is true that in many instances an error with regard to this point arises from confounding roseola with scarlatina, but exclusive of these, cases have been observed by those fully competent to discriminate the affection correctly. A colleague who has bestowed special attention on the diseases of children and enjoyed large opportunities for observation,[1] lately mentioned to the writer an instance in which a patient had been distinctly affected with scarlet fever three times. Nor is the fact of the recurrence of this disease surprising in view of the fact that all the other eruptive fevers, as well as the continued fevers, occasionally attack the same person more than once.

With regard to fatality, the mortuary tables of the Registrar General of Great Britain show that the disease is more fatal in towns than in the rural districts, and that amongst the communicable diseases, scarlet fever ranks second on the list, the fatality being exceeded only by the returns of typhus fever, the latter including cases of both typhus and typhoid fever.

Dr. Richardson thinks it desirable that the three types of scarlet fever, viz., scarlatina simplex, anginosa and maligna, shall be considered as constituting but one disease. We must confess surprise at the intimation that these types are considered by any as distinct affections, and it seems to us gratuitous to adduce facts to prove that they are but different varieties of the same disease. However, some of the facts stated under this head are interesting in themselves. One of these facts is, that the poison derived from the mildest of cases may give rise to the most malignant form of the disease, and conversely, the disease may be mild when the poison comes from a malignant case. Another fact stated is, that neither season nor any known meteorological change, affects the character of the disease. It is a common belief that the type and intensity of the disease vary greatly at different seasons. The author thinks there is no ground for this belief. Out of a given number of cases, he thinks there are a proportionate number of mild and severe cases. We quote his remarks on this point.

[1] Prof. Geo. T. Elliot.

"It happens, not uncommonly, that a district of country remains for many years free from an epidemic visitation of scarlet fever. In the period during which the disorder is absent, large numbers of children are born, each one susceptible to the affection. Suddenly, the disease is set up by the introduction of a case into the locality; and the train once lighted, every house becomes the *habitat* of the dreaded visitor. In such epidemics as these, there are always a large number of malignant cases and a frightful mortality; but there is an equal number of milder cases always to be found, if sought for with care; and even a larger number of mild than of malignant cases, in proportion to the population attacked. My own observations would lead to the opinion that the proportion of malignant to mild cases is as one to five; but this is a point which requires much more elaborate investigation than I have been able to bestow upon it."

Another common belief is, that the disease, as regards its type and intensity, is influenced by locality: and this the author thinks is a mistaken belief. He thinks the disease is as likely to present its mildest phases in low dirty houses, and in foul unventilated chambers, as in the rooms of the well provided classes, where the strictest cleanliness and the most perfect ventilation are provided, although these circumstances affect materially the successful treatment of the disease. So, also, as regards the physical condition of the patient at the period of attack, the weakest of the members of a family, and the ill-fed children of the poor, are not more likely to suffer from the malignant forms of the affection, than the strongest and the well-fed children of the rich. Why one person experiences a mild attack and another person is speedily destroyed by the disease, is one of the mysterious facts, which, with our present knowledge, we cannot explain. We can only say that "there is in the organism itself a directing cause which modifies the violence of the poison, or intensifies its action."

Dr. Richardson shows from the analyses of Andral and Gavaret, that the fibrin of the blood is increased in scarlet fever. Adopting the terms introduced by Franz Simon, the condition is one of hyperinosis, instead of hypinosis; in other words, the blood is in the condition in which it is found in acute inflammation, instead of the condition belonging to the continued fevers. The changes in the urine also affiliate the disease to inflammation The pigmentary matter is usually largely increased, the urates, deeply tinged, are apt to be abundant, and frequently there is a free deposit of uric acid. Moreover, during the acute stage the urea is increased and the chlorine reduced, conditions, as the author remarks, almost identical with those which occur in pneumonia.

The author omits to state whether these changes were observed in cases in which the affection of the throat was not sufficient to constitute a more or less severe local inflammation.

The fluctuations of medical practice are perhaps nowhere more conspicuous than in the treatment of scarlet fever. Within the last twenty years it has been treated, on the one hand, by means of the antiphlogistic remedies pushed to their present extent; and, on the other hand, by the free use of alcoholic stimulants.

Cold ablutions and the warm bath have each been in vogue. Various remedies have been supposed to exert a special influence over the disease, and not a few practitioners are content to let the disease have its course without any active interference. We shall give Dr. Richardson's views without stopping to discuss them.

Dr. Richardson considers that a morbid material is eliminated by the skin, and that the chief object of treatment is to increase the cutaneous excretion. The hot air bath seems to him best adapted to this end. Free

diaphoresis, in whatever way produced, would, he believes, in the presence of pure air for respiratory purposes, lead to recovery in the majority of cases. It would appear, however, that this belief is founded more upon speculative views and a distrust of other methods of treatment, than upon an extended experience. He refers to only twelve instances in which the treatment appeared to be efficient, a number too small to furnish evidence sufficient to establish the superiority of any therapeutical method.

Dr. Richardson believes the deposition of fibrin in the right cavities of the heart to be a fatal element in this disease. We are prepared to consider this as probable, although he does not in this essay cite the results of direct observation in support of his belief. We incline to think that in not a few instances of various diseases characterized by hyperinosis and enfeebled action of the heart, this accident is apt to take place, and that, in this way, an unexpectedly fatal result may often be explained. This subject seems to us not to have received the attention which it merits. On this subject Dr. Richardson's prize essay contains some valuable observations. Recognizing the liability to the coagulation of fibrin in the heart-cavities in scarlet fever, Dr. R. considers it as furnishing an important prophylactic indication. There are two remedies which, as he thinks, will tend to prevent this accident, viz., acetic acid and ammonia. Both these medicines have the property in common of holding the fibrin of the blood in solution; and they also tend to eliminate carbonic acid.

The author advocates the importance of administering these agents in small and frequently repeated doses, so that the blood may always contain them. They should be administered in a way to constitute a pleasant drink rather than a nauseous draught. The ammonia should be given until it is very distinctly presented in the breath. This may be determined by holding a glass rod moistened with hydrochloric acid for the patient to breathe on, when, if much ammonia be expired, the white characteristic fumes will be developed. The author, however, prefers to place a drop of pure hydrochloric acid on a microscope slide, and allow the patient to breathe some twenty or thirty times over the acid surface; then the glass slide being gently dried before the fire, or near a spirit lamp, there will be left a characteristic crystalline deposit which is represented in the book.

The author attaches but little importance to the local treatment of the throat in scarlet fever. He thinks he has known great injury done by the excessive application of caustics. We agree with him cordially in this regard.

On Pulsatile Pulmonic Crepitation.—The physical sign, which the author designates by this name, is described in the following passage:—

> "It is a loud, harsh, crackling sound, resembling that which may be produced by inflating a piece of lung-tissue, and, during the inflation, making forcible, quick compression of the lung, so as to dislodge rapidly the air from the vesicles. The sound is heard only at the time when a pulsating structure, near to the point where it is met with, is presenting its impulse. Even then it is elicited only when the lungs are charged with air. Sustained inspiration gives a condition in which the crepitation is presented at every impulse of the pulsating organ. Sustained expiration removes the crepitation, leaving to be heard the simple pulsatile sound of the vascular structure, and nothing more. The sound may be met with over the heart—*i. e.*, between the heart and the thoracic wall—or over the aorta—*i. e.*, between the aorta and the thoracic wall."

Three examples are detailed; in two the sound being produced by the heart, and in the third by the aorta.

On Uræmic Coma.—We agree with the author in his remarks on the importance of the subject of uræmia to the student and practitioner. The

knowledge of the subject already acquired furnishes a striking example of recent progress in pathology and practical medicine, but much yet remains to be ascertained. It is not probable that we are acquainted with all the phenomena dependent on uræmic poisoning. The special conditions of the kidney, which lead to the accumulation of urea in the blood, are not fully determined. It is still a question whether the urea acts as a poison without change, or by its decomposition and the formation of another product. Finally, there is room for inquiry as to the most efficient measures of treatment. Dr. Richardson's essay on the subject is interesting, although not containing any positive addition to our knowledge.

He adduces six cases of uræmia with convulsions and coma, which he has observed, and two cases in which uræmia was simulated by the effects of the narcotic poison, atropa belladonna. He deduces, as the premonitions of uræmia, the following: Sleepfulness, manifested by an irresistible desire to sleep at almost any time and place; paralysis of extreme parts, as in the hands, hips, or feet; transitory confusion of mind, without vertigo; vomiting, which is sometimes severe; relaxation of the bowels; a peculiarly fetid condition of the breath, like the odour of sulphide of ammonium, and the presence of ammonia largely in the breath; unusual susceptibility to cold; oppression after a hearty meal, and a dangerous susceptibility to the action of mercury and opium.

The acute symptoms are coma, or convulsions, or both combined. They are generally preceded by suppression of urine, or by constipation, or by a chill. Squinting may or may not occur. The pupil is usually largely dilated and fixed. The respiration is irregular, and the pulse slow, intermittent, or irregular.

The diagnosis between uræmic poisoning and belladonna poisoning is difficult, the same phenomena occurring in both. The vomiting of suspicious matter is important as a guide to diagnosis.

From epilepsy, uræmia is distinguished by the tendency to diarrhœa, and by suppression of urine. Moreover, the convulsion in uræmia has not the tonic character of that in epilepsy; the asphyxia is not so marked, and the coma is more prolonged.

Before uræmia was known, cases doubtless constituted one of the varieties of apoplexy. From the latter it is distinguished by the skin being less hot, the stertor less marked, the blowing respiration less frequent, and the convulsions.

Uræmia is distinguished from poisoning by opium, by the dilatation of the pupils; by the temporary return of consciousness in some cases; by the absence of stertor; by the convulsions, the looseness of the bowels, and suppression of urine.

The author does not regard the presence of ammonia in the breath as of any peculiar diagnostic value, inasmuch as ammonia is present in health, and is expired in excess in many diseases.

In uræmic intoxication the blood presents the physical and chemical peculiarities of alkaline or alkaloid toxæmia. It remains fluid after being removed from the body, or separates into loose shreddy masses of fibrin. The red corpuscles are deformed, and lessened in number. There is an excess of serum in proportion to the solid constituents. The amount of urea is increased.

Dropsical effusions occur in consequence of the decreased specific gravity of the blood. The vascular organs are more or less congested. Inflammation of the serous or mucous, or parenchymatous structures is apt to occur, and in this way life is frequently destroyed.

As regards the morbid condition of the kidneys, uræmia occurs in connection with the exudation into the lobules and epithelial desquamation which follows scarlet fever; in cases of atrophy of the organs; in enlargement with granular, fatty, or waxy degeneration, and when no apparent lesion is present to account for the symptoms.

The author states that during uræmic coma there is invariably a large amount of albumen in the urine. We think this statement is too positive. We have lately observed a case of fatal uræmia succeeding scarlet fever, developed after the albumen (which had been abundant) had entirely disappeared from the urine. The urinary sediment, however, contained a large number of waxy and epithelial casts. This case illustrated the value of microscopical examinations of the urine, for the disappearance of the albumen naturally enough led to a false security as regards danger from uræmia.

That the poisoning in uræmia is due to the retention and accumulation of urea in the blood is proved by direct experiments. The author refers to the conclusive experimental researches of Hammond, on this point, published in this Journal. Frerichs has contended that the urea accumulating in the blood becomes poisonous, not as urea, but by being converted into the carbonate of ammonia. Dr. Hammond's researches go to show that in uræmia there is not an excess of ammonia in the blood. On the other hand, a series of experiments made by Dr. Barker, of Bedford, in 1856, show that ammonia given to animals in free and continued doses, does not give rise to the phenomena of uræmia. Dr. Richardson details these experiments, together with a series of experiments made by himself, showing that the effects of adding ammonia and urea to recently drawn blood, are not identical.

The treatment of uræmia involves attention to the skin, in order to have a free eliminative action in this direction. For this purpose, a daily ablution of the surface is important, and, when practicable, active exercise is to be enjoined. When the symptoms demand more active measures, the hot-air bath is of great value. We can testify to the relief afforded by the latter measure in cases of Bright's disease.

The diet of a patient threatened with uræmia, should be simple. Alcoholics in moderation are useful. Animal food should be taken sparingly. Ripe fruits are useful. The amount of liquid taken should be moderate.

Dr. Richardson thinks that when uræmia is present, the kidneys should be left to do as little labour as possible. If the hot-air bath be not available, purgation should be resorted to. Diuretics, under these circumstances, he believes to be injudicious. We are not satisfied that the author is correct in his sweeping objection to diuretics. We think there is no objection to ascertaining if the kidneys will not respond to a diuretic remedy, and, if so, it may be useful, perhaps, as Dr. Bennett suggests, by washing away the casts which obstruct the renal tubes.

Many readers will be surprised at the remedy on which Dr. R. places his chief reliance when the uræmic coma is profound, and death imminent. It is bloodletting. He advocates its employment boldly until the oppression is relieved, and consciousness shows proofs of return. The rational ground for this measure will certainly not be considered sound by most readers, viz., that bloodletting is the readiest means of removing the poison directly. We remove in this way only so much of the poison as is contained in from fifteen to thirty ounces of blood, leaving the quantity which remains in the vessels not less poisonous than before. However, it should be added that the author attaches considerable importance to the relief of congestion of

the visceral organs, which he supposes to be one of the immediate effects of bloodletting, and he thinks that in consequence of this effect, diaphoretic and purgative remedies act more efficiently than without the abstraction of blood. He gives three cases in which bloodletting was apparently useful in uræmic coma, but we suspect a larger experience than this will be requisite to convince the majority of practitioners of the propriety of the measure.

On Cardiac Apnœa.—The author applies this name to the breathlessness caused especially by an insufficient supply of blood to the lungs. This may occur in consequence of mechanical obstruction on the right side of the heart from the deposit of fibrin. It may occur in consequence of disorganization and of dilatation of the muscular wall of the right ventricle, and it may be dependent on the presence in the blood of an alkaloid poison.

We give the diagnostic symptoms in the author's words:—

"The absolute diagnosis of cardiac apnœa may be stated thus. It is an apnœa with open air-passages; not panting breathlessness, but suppressed breathing. The struggle for breath is due to spasmodic contraction of the muscles of respiration, and consequently is marked by no rapid effort of those muscles to overcome a difficulty in the respiratory tract. The apnœa is described by the patient, if he can express himself, as arising from without, or from external pressure, as though his chest were compressed and stiffened. There is darting pain through the chest—cramp. The other parts of the muscular system, if they are involved, are cramped, not convulsed. The mind is usually unaffected. During the paroxysm there is either irregularity, or prolonged absence of the pulse; and the same condition, of necessity, is presented by the heart. The surface of the body is cold and pale; the countenance stormed with anguish, but not incessant; if the spasm permit, there is constant movement on the part of the patient in the effort to obtain relief. There is always pain of the acute kind, more or less marked. The pain is most frequent and most lancinating between two well-defined points—the lower part of the sternum, through the chest, towards the last dorsal vertebra; with this pain the breathing is locked up."

"There is generally more or less of muscular spasm and pain in other parts of the body. In some cases one limb is thus affected, or one arm, which, during the whole seizure, may be in a state of intense suffering, with more or less of rigidity; in other cases, where the seizures are very severe, this spasmodic condition may extend throughout the whole of the muscular system, causing a general tetanic constriction."

"In all cases of death from cardiac apnœa, the final act is one of persistent muscular contraction; the heart first failing, the muscles of the chest become fixed from tonic spasm; the voluntary muscles follow next, and the whole body, left more or less rigid, may pass into rigor mortis without any intervening relaxation of the muscular organs."

The physical evidence of cardiac apnœa, without valvular lesions of the heart, consists in the absence of pulmonary signs, absence of cardiac murmur, and irregular action of heart.

In the majority of the cases of cardiac apnœa, the author believes the difficulty, so far as the heart is concerned, to relate to the right side. This, he thinks, is usually the case in fatty degeneration, the right ventricle being more apt to be affected than the left. Exceptions to the latter occur; we happen to have under examination, at this moment, a specimen in which the degeneration of the walls of the left ventricle is evidently the greatest. In cases of fibrinous concretion within the heart, the deposit is oftener in the right than in the left cavities. The author cites examples in which the tricuspid valves were tied together by bands or strings of fibrin; we have met with such examples, and, also, with instances in which the mitral valve

was in a similar condition. The phenomena of cardiac apnœa, however, may arise in cases of obstruction to the flow of blood through the left cavities of the heart. We think Dr. R. does not give sufficient prominence to the latter class of cases. Whenever there exists aortic insufficiency to much extent, an unusual accumulation of blood within the left ventricle, distends and paralyzes the muscular walls of this cavity, inducing symptoms of cardiac apnœa, and frequently sudden death. In cases of this kind, as the author remarks, the lungs will be engorged with blood, whereas, when cardiac apnœa depends on obstruction of the right side of the heart, the lungs are bloodless, but the other important viscera are congested.

During a paroxysm of cardiac apnœa, the treatment embraces the following simple measures: plenty of air, the sitting or semi-recumbent position, and as much warmth as can conveniently be borne. We think the author should have added alcoholic and ethereal stimulants; in fact, the latter seems to us specially important, and not to be omitted without risk.

In persons predisposed to paroxysms, the treatment consists of measures to strengthen and invigorate the body.

The space which we have devoted to an analytical review of Dr. Richardson's work, is the best proof we can give of the interest with which we have perused it. We shall welcome cordially other volumes of the same practical stamp. A. F.

ART. XIV.—*Medico-Chirurgical Transactions.* Published by the Royal Medical and Chirurgical Society of London. Vol. XLIV. London, 1861. 8vo. pp. 286.

THIS volume contains twenty original communications. Abstracts of seven of these have been published in the numbers of this Journal for last year, in the quarterly summaries of improvements and discoveries in the medical sciences, and we shall now proceed to give an analytical review of the contents of the other papers in the volume.

I. *A Case of Gastrotomy for Extra-Uterine Gestation.*—In this communication, the author, Mr. JOHN ADAMS, gives the history of a case in which he successfully removed a full-sized fœtus from the abdomen of a healthy young woman, six months after the period of gestation was accomplished. The circumstances in the case were such that there could be no doubt as to its nature. In operating, a vertical incision about five inches in length was made over the most prominent part of the tumour, beginning a little above and on the right side of the umbilicus, and extending as far as within an inch of the pubis. Contrary to Mr. Adams's expectations, the peritoneum was found here to be only slightly adherent to the cyst, which was about four lines in thickness and very firm. The fœtus was extracted by the breech, the funis being divided so as to leave about two inches outside of the incision; the placenta was left, as it was found by traction on the funis to be firmly adherent. No opportunity was afforded of proving the precise situation of the extra-uterine fœtus, and, very properly, no attempt was made to discover whether it was developed in the walls of the uterus, or in the abdominal cavity by attachment of the ovum to the peritoneal surface of the intestines. The wound closed entirely in the course of eight months, and the woman was well with the exception of a ventral hernia, easily retained by a suitable truss.

The practice pursued by Mr. Adams in this case has a forcible bearing

on several points of serious importance in connection with these cases of extra-uterine pregnancy. These points are—first, the propriety of performing any operation whatever; secondly, the time at which the operation, if thought desirable, should be performed; and, lastly, the method of performing it. As to the child, whenever an operation has been performed for the purpose of saving it, the result has always been fatal to the mother, and we must resign ourselves to leaving its safety altogether out of consideration.

Many cases have been recorded where, in extra-uterine gestation, the fœtus has remained innocuous for an indefinite period; in some of them, for more than fifty years. There are on record, also, numerous instances where the fœtus has been got rid of by ulceration into the vagina, rectum, colon, bladder, as well as by abscess opening externally either at the umbilicus or some other part of the abdominal walls. The probabilities are, however, that, sooner or later, inflammation and its consequences may arise in the cyst; and many mothers die during the efforts of nature to get rid of the incumbrance. The surgeon has here a very difficult question to settle, but it appears to us that he would do well, after having waited for such a time that the probabilities are that adhesion has taken place between the cyst and the walls of the abdomen, to remove the fœtus by an operation.

The only circumstance requiring particular remark in connection with the method of operating, refers to the placenta. From the few recorded cases of the operation, it appears that wherever any rude attempts have been made to extract the placenta, the cases have invariably been fatal.

II. *On an Operation for Pervious Urachus with Stillicidium Urinæ.*—In this paper Mr. Thomas Paget records two cases in which he successfully operated for the closure of pervious urachus. One was a female infant, little more than four months old; the other was a man aged fifty-five years. The operation consisted simply in vivifying the whole circumference of the aperture, and then holding the raw surfaces in contact by means of hare-lip sutures.

III. *Contributions to the subject of Compound Fracture; being an Analysis of* 302 *Cases.* By Thomas Bryant.—An abstract of this paper is published in the number of this Journal for April, 1861. Any general conclusions that may be drawn from the tables contained in it can be of little value, for no cases in surgery require to be treated more upon their individual peculiarities than those of compound fracture. There is, nevertheless, much of interest in the material thus presented to the profession.

IV. *An Analysis of Fifty-two Cases of Epilepsy observed by the Author.* (Second Series.) By Edward Sieveking, M. D.—An abstract of this paper is published in the number of this Journal for April, 1861.

V. *On Pulsating Bronchocele.* By Joseph Bullar, M. D.—An abstract of this paper is published in the number of this Journal for July, 1861.

VI. *Remarks on the Cause of Closure of the Valves of the Heart.* By William O. Markham, M. D.—The perfect closure of the auriculo-ventricular valves of the heart during ventricular systole, is undoubtedly caused by the pressure of the blood upon their ventricular surfaces. In this way, and by the simultaneous contraction of the papillary muscles, the complete closure of the opening is perfected and maintained, while the blood is being forced into the arteries. There is difficulty, however, in explaining satisfactorily the cause which is effective in raising the valves upwards towards each other from the walls of the ventricles, so as to enable the blood to press upon them and tightly close them.

In this paper, Dr. Markham maintains that the valves are raised by the

agency of elastic tissue, which is so disposed within them as to render the action at once simple and effective. The elastic fibres are chiefly placed in the upper layer of the valves, so that they must necessarily tend to approximate the two borders of the valves in the direction of their auricular surface.

For our own part, we venture to express the opinion that the difficulty sought to be explained is a made one, for we believe that the auricular-ventricular valves never open so widely as to come in contact with the walls of the ventricle, and that there is always left some blood behind them.

VII. *Pathological Researches into the Diseases of the Ear.* (Seventh Series.) *Sebaceous Tumours in the External Auditory Meatus; their effects upon the Organ of Hearing, the Petrous Bone and the Brain, with Suggestions as to their Treatment.*—In this communication, Mr. JOSEPH TOYNBEE calls attention to a disease of the external ear caused by glandular hypertrophy of the sebaceous glands. The effect upon adjacent tissues is similar to that witnessed in hypertrophic tumours of these glands in other parts of the body, absorption of the bone being produced sometimes to so great an extent that a communication is formed with the mastoid cells, tympanum, cerebral or cerebellar cavities. These sebaceous tumours grow in the external meatus, and even reach a considerable size, causing absorption of the bone, without the occurrence of pain; indeed, as a rule, the attention of the surgeon is called to them either on account of the deafness which follows the occlusion of the meatus, from the presence of a fetid discharge, or from symptoms of irritation of the brain, which too often terminate in death. The only disease for which they are likely to be mistaken, is the presence of one or more osseous growths in the meatus, covered by the dermis; gentle pressure with the rounded extremity of a probe is, however, sufficient at once to discriminate between the two kinds of growth.

In their treatment, the effort of the surgeon should of course be to extirpate them as completely as possible; the evacuation of the contents of these tumours is of no permanent benefit, the capsule itself must be removed. This can be effected by making a crucial incision into the tumour, and, after squeezing out the laminæ, the firm wall may be seized by a pair of forceps and the whole of it withdrawn.

Mr. Toynbee gives the detailed histories of six cases of these sebaceous tumours, with an account of the appearances found upon dissection after death; a table is added presenting the leading features of all the cases, eighteen in number, which have fallen under his observation, and in which he has been able to conduct dissections; and two cases are related that have been treated by him successfully.

This communication is accompanied by two plates containing a number of figures representing the appearances found after death in several of these cases.

VIII. *Further Observations on the Structure and Treatment of Uterine Polypi.*—In this communication Dr. ROBERT LEE presents the history of 103 cases of uterine polypi, reduced into a tabular form, in which the date, name, age, and social condition of the patients affected with polypus of the uterus which have ever come under the author's observation, fortunate or unfortunate, are recorded, and the symptoms, treatment, and result are given.

In three of these 103 cases no operation was performed, and the result was not known. In two of the remaining 100 cases the polypi disappeared spontaneously by some process the nature of which was not ascertained. Of the 98 cases which remain, five died before any attempt had been made to remove the polypus by ligature or by any other means. After deducting

these ten cases, there remain 93, of which 8 died and 85 recovered. Of the last 50 cases which have come under his own care, and in which the operation for the removal of the polypus has been performed by him, Dr. Lee states that not one has died.

For the removal of these polypi, on account of the hemorrhage that may follow their excision, Dr. Lee makes use of a ligature applied by means of a bent rod, great care being taken to remove as soon as possible the sloughing mass.

The success attending the use of the ligature in the hands of Dr. Lee, in these cases of fibrous polypus of the womb, is not at all in accordance with what is said of it by Dr. West, whom we have learned to regard as perhaps our highest authority in subjects of this kind. In his *Lectures on the Diseases of Women* (page 324), Dr. West says that the mortality is more than double that of the operation of lithotomy, as high as that which occurs in placenta prævia, and higher than the mortality from malignant cholera.

Two plates are attached to this communication, representing fibrous tumours in the womb.

IX. *Observations on the Growth of the Long Bones and of Stumps.* By George Murray Humphry, M. D.—An abstract of this communication is published in the number of this Journal for July, 1861. It is accompanied by a plate containing numerous figures representing the appearances found in the bones of the animals experimented upon.

X. *Researches on Asphyxia; with Observations on the Effects produced by the Hot-bath in Asphyxiated Animals, and its use in the Treatment of Suspended Animation.* By A. T. H. Waters.

XI. *Letter to the President of the Royal Medical and Chirurgical Society, relative to the preceding Paper on Asphyxia and the Use of the Hot Bath,* by A. F. H. Waters, M. D. From Sir Benjamin Collins Brodie.—Abstracts of these two communications are published in the number of this Journal for July, 1861.

The ill effects of the hot bath in cases of drowning are made very manifest in the experiments recorded by Mr. Waters. The effect of the hot bath being to stimulate the heart to increased action, by which more blood is sent to the lungs, it must necessarily increase the congestion of the lungs already existing. It is the reproduction of the action of respiration, and not the excitation of the circulation, that is called for in cases of drowning, and the hot bath could only be recommended from a want of knowledge of their correct pathology.

The manner in which death occurs in submersion is very beautifully shown by the experiments of Dr. Beau, recorded in a paper published in the *Archives Générales* for July, 1860. These show that in animals that are drowned, the immersion of the natural orifices of respiration and their impermeability to air, caused a sympathetic or reflex action, bringing about spasmodic occlusion of the sphincters or orifices of respiration, and arrest of the respiratory movements. There is a great analogy between death from drowning and death as it often occurs in tetanus.

XII. *A Contribution to the Pathology of the Pons Varolii.*—This communication, by Herman Weber, M. D., contains the detailed history of several cases which illustrate, in a very interesting manner, the physiology and pathology of the pons varolii. In two of them, the focus of the disease was for some time small and circumscribed; there was no complication with affections of other portions of the cerebellum, nor was there any disturbance in the encephalic circulation. They exhibit experiments performed

by nature with greater accuracy than we shall ever be able to practise in vivisections.

The subject of the first case was a tuberculous man, 25 years of age, who had first vertigo, then motor paralysis in the limbs of the right side, afterward anæsthesia in the left side of the face; later, also diminished sensation in the limbs of the right, and diminished motion in those of the left, side; contraction of both pupils, especially the right; eighteen hours before death, attack of convulsions, followed by loss of power of articulation and deglutition, perfect motor paralysis and anæsthesia in limbs of right, imperfectly in those of left, side; without loss of consciousness. Tubercle in left half of pons Varolii, with softening in circumference, and hemorrhage in the latter.

The subject of the second case was a boy, aged 7 years, who was affected with chronic hydrocephalus and tuberculosis; six months before death, he had attacks of convulsions in left arm and leg; pain in right side of face; later, motor paralysis in limbs of left side, anæsthesia in right half of face; consciousness undisturbed; contraction of pupils, especially left; paroxysm of general shaking; four weeks before death, rigid contraction of paralyzed limbs; death under symptoms of tubercular meningitis. Tubercle in right half of pons Varolii, near origin of right quintus, with atrophy of the latter; red softening round tubercle; phenomena of tubercular meningitis.

In comparing these two cases, in which the anatomical alterations were, to all appearance, in the beginning almost the same, we remark that in both motor affection, first of the arm and afterwards also of the leg of the opposite side, together with attacks of vertigo, were the first phenomena to attract attention; in both cases, the sensibility of the affected limbs remained for a long period unchanged, and the side of the face opposite to the lesion was altogether unaffected; in both cases, contraction of the pupils of either side, especially of the opposite, was an early phenomenon; in both, sensitive affections of the corresponding half of the face and mucous membrane of the mouth and tongue; in both, at a later period, wasting of the paralyzed limbs, and, still later, rigidity of the same, impaired articulation, deglutition, and respiration. The intellectual functions and those of the special senses appeared throughout uninfluenced.

Among the physiological inferences which may be drawn from these cases, the following are worthy of special remark: 1. That the conducting fibres for the limbs passing through the pons, as well the motor as the sensitive, decussate below the pons. 2. That there are no sensitive fibres for the limbs in the lower or anterior part of the pons. 3. That the upper or posterior part of the pons contains sensitive fibres for the limbs. 4. That the intellectual functions of the brain are independent of the pons Varolii. 5. That the nerves regulating the state of the pupils seem to be in close connection with the pons Varolii. There was marked contraction of both pupils, greater on the side opposite to the lesion. 6. Extensive lesion of the pons seems to be associated with disturbance of deglutition, articulation, and also respiration. But it is possible that these phenomena do not depend so much on the alteration in the pons itself as on the influence exercised through it on the adjacent parts of the medulla oblongata.

XIII. *On Disease of the Kidney accompanied by Albuminuria.* (Second paper.) By W. H. DICKINSON, M. B.—In a paper contributed to the last volume of *Transactions*, which was noticed in the number of this Journal for April, 1861, Mr. Dickinson endeavoured to show that there are two essentially different diseases of the kidney that have been denominated as Bright's disease. One, which is characterized by increase of bulk,

the surface remaining smooth, is owing to an inordinate secretion within the tube. The other disorder produces for the most part diminution of size, renders the surface uneven and granular, and is the result of an affection of the intertubular substance. In this present paper, Mr. Dickinson completes his sketch of the disease by filling in the clinical details, showing how, during life, the one disease may be distinguished from the other, and how far the conclusions based upon morbid anatomy are warranted by what is observed before the death of the patient. For this purpose, he has extracted from the ample records of St. George's Hospital the particulars of every well-defined case of either of these disorders that was examined in the dead-house during ten consecutive years. The total number of "*post mortems*" in this period was 2350, in 250 of which the kidneys were granular, in 119 smooth and mottled.

The following table shows the percentage of affections accompanying each renal disorder:—

	Bronchitis.	Diarrhœa.	Vomiting.	Pleurisy.	Pericarditis.	Peritonitis.	Pneumonia.	Œdema.	Ascites.	Hydrothorax.
Smooth mottled kidney 119 cases	18.5	20.1	26.0	64.3	27.7	25.2	20.1	66.3	33.6	28.5
Granular kidney 250 cases	22.0	11.6	15.6	60.8	32.8	13.6	12.4	48.0	26.0	25.2

	Hydro-pericardium.	Epistaxis.	Erysipelas.	Cirrhosis of the liver.	Atheroma.	Hypertrophy of heart.	Valvular disease.	Convulsions.	Simple coma.	Sanguineous apoplexy.
Smooth mottled kidney 119 cases	24.3	0.8	15.9	10.9	21.8	24.3	17.4	10.9	10.0	2.5
Granular kidney 250 cases	14.0	0.8	6.8	15.2	52.4	48.0	43.2	5.6	8.8	6.8

From what has been brought forward by Mr. Dickinson in this paper, the following conclusions may be deduced:—

The smooth mottled kidney is the result of chronic nephritis. The disease may befall any person, the youthful being the most susceptible. It results from cold, from scarlatina, or some similar cause of renal hyperæmia. It begins with marked symptoms, and usually terminates under a year. It is often temporary in its nature, or amenable to treatment.

The granular kidney is the result of a degeneration which is peculiarly apt to take place in gouty or tuberculous persons. It is never seen except in adults, and is most frequent after the age of forty. It commences gradually, and is quite indefinite in its duration. This state of organ is necessarily irreparable.

Chronic nephritis is characterized by dropsical effusion; a great liability to inflammatory attacks affecting the serous membranes and lungs; diarrhœa, especially in the later stages; pain in the loins, and finally coma, preceded by epileptic convulsions. The urine is scanty, often bloody, the

albumen abundant, and the specific gravity comparatively high. Casts imbedding entire epithelial cells are characteristic of the disorder.

Granular degeneration is to be recognized by a gradual failure of health, with sharpening of the features and discoloration of the skin; while dropsy is often absent or of small extent. Frequency of micturition is observed, especially at night, and there is great liability to bronchitis. There is also a tendency to valvular disease of the heart, as well as to extravasation of blood within the cranium. Epileptic convulsions sometimes occur, but a fatal state of semi-coma often comes on without any such antecedent. The urine is increased in quantity, except in the later stages, of low specific gravity, and often containing only a trace of albumen. The casts most commonly found are of coarse, granular matter.

This communication is accompanied by a plate, representing the appearance of the tubular casts, found in the urine in these two disorders.

XIV. *On a Case of Aneurismal Varix in the upper part of the Thigh, following the Employment of Pressure for the Cure of an Aneurism of the Posterior Tibial Artery.* By OLIVER PEMBERTON.—A considerable number of cases of spontaneous arterio-venous communication, between the various parts of the aorta and the contiguous vena cava, and between the aorta and pulmonary artery, have been reported during the past twenty years, instances of such communication, however, between the contiguous arteries and veins in the extremities are exceedingly rare.

In the present communication is given the history of a case, in which a man, fifty years of age, was cured by compression of an aneurism of the posterior tibial artery. At the commencement of the treatment, the pad was applied for three weeks to the artery on the pubes, for eight, nine, or ten hours, out of each twenty-four, and throughout the entire subsequent period of nine months to the vessel immediately below Poupart's ligament.

After remaining well for ten months, the man re-entered the hospital with symptoms of arterio-venous communication in the limb, in which the aneurism had existed, and after a sojourn there of eight months he died, apparently from dropsical effusion into the abdominal and thoracic cavities. On examination, a communication was found between the femoral artery and vein, at the place where pressure had been applied for the cure of the aneurism in the leg. The opening in the artery was nine lines in length, by nearly six lines in breadth. The edges of the aperture were rounded and smooth. The wall of the artery was irregular, being marked with depressions and some small patches of atheroma. The coats of the vein were dilated into a varix or pouch, which enveloped the artery, leaving the tube of the latter free and distinct, except behind, where the tunics of both vessels were blended together.

In commenting upon this case, Mr. Pemberton would attribute the opening formed between the artery and the vein, to the compression made use of to cure the aneurism. This, however, appears to us to be more than unlikely. At no time during the employment of the pressure, had any eschar formed, any disposition to phlebitis manifested itself, or enlargement of the neighbouring glands appeared; and symptoms of the communication did not show themselves until ten months after the man had been walking about perfectly well. It should, moreover, be taken into consideration that such an effect has never been known to follow compression in the cure of aneurism, and the autopsy showed that there was disease of the coats of the artery, which, we believe, is the origin of these arterio-venous communications. That disease which on one side of the vessels would cause false consecutive aneurism—on the other, against the vein, would cause adhesion of the vessels and arterio-venous aneurism.

This communication is illustrated by a plate, containing two figures, representing the exterior and the interior of the tumour.

XV. *On a Case of Aortic Aneurism, in which a Communication with the Pulmonary Artery was recognized during life by means of Physical Diagnosis.* By WILLOUGHBY FRANCIS WARD, M. B.—This case is of interest, as being, probably, the first in which such a lesion has been discovered during life by physical means, and it will be useful in establishing the rational diagnosis of similar lesions in future.

The patient was a fine-looking, well-made man, thirty-five years of age, complaining of slight cough, some general debility, and a little loss of flesh. Physical examination gave the following result: Cardiac dulness increased in the vertical direction. The apex of the heart could be distinctly seen and felt beating in the sixth intercostal space, and the heart was also to be seen beating in the fifth. Over the cartilage of the fourth left rib two loud murmurs were heard instead of the usual cardiac sounds; that, with the second sound, being of a hissing character, and so prolonged as to continue till the commencement of the next ventricular systole. At this same spot a very considerable purring tremor accompanied the second murmur. The first murmur was of a loud bellows character. Both murmurs were audible as high as the bifurcation of the common carotids, in the back, and over all the upper part of the chest; they did not seem to be peculiarly propagated towards the left subclavicular space. At the apex of the heart a single murmur only was to be heard, and this evidently attended, or rather replaced the cardiac first sound; it could be traced easily down to the ensiform cartilage. At the apex, the cardiac second sound was very distinct and quite natural; no trace of murmur.

The pulsation of the carotid was very visible, particularly on the left side, and marked by some, though not considerable, thrill. The heart's action was quiet and regular. The only abnormal physical sign in the lungs was some mucous râles at the base of each, equally on either side. Pupils contracted, but mobile; liver enlarged, no icterus; urine normal.

From this combination of physical signs, by a very interesting train of reasoning, Mr. Ward came to the conclusion that there was a communication between the aorta and the pulmonary artery, which was found at the autopsy to be the case.

XVI. *Account of a Case in which the Corpus Callosum and Fornix were imperfectly formed, and the Septum Lucidum and Commissura Mollis were absent.* By J. LANGDON H. DOWN, M. D.—This communication, both from the curious nature of the case reported, and from the interesting general remarks of the author, is one of considerable importance as regards the pathological anatomy of idiocy. Idiocy is supposed by many to depend frequently on defective commissural connection between the cerebral hemispheres, but among fifty brains of idiots which Dr. Down has dissected, the example here communicated, is the only one he has found. This paper will be found by those particularly interested in such subjects, to be an important addition to the facts bearing upon them, which have been so ably generalized by Mr. Paget, in his communication contained in the XXIXth volume of the *Transactions*.

XVII. *Syphilitic Inoculation and its Relation to Diagnosis and Treatment.*—This paper, by Mr. HENRY LEE, is one of the longest and one of the most valuable in the present volume of *Transactions*. The conclusions to which the author arrives appear to be fully supported both by clinical observations and also by direct experiments. They will be found to accord with those maintained by Dr. Bumstead, whose excellent work

we had recently the pleasure of commending to the attention of the profession. The principal of these conclusions are as follows:—

That there are two forms of syphilitic disease, distinguished in their origin by the adhesive and suppurative kinds of inflammation. That one is followed by constitutional symptoms, and that the other is not.

That the adhesive form of inflammation may be distinguished from the suppurative by the nature of the secretion which it produces, and by the results of inoculation.

That both kinds of action may be communicated to the same individual at the same time, and that then the suppurative action will develop itself first, as having the shortest period of incubation, and subsequently the adhesive action will run its regular course.

That when these two actions are developed upon the same part, the affection which results has not the characters exclusively of the adhesive or of the suppurative inflammation, a mixed form of disease presents itself.

That the specific adhesive inflammation may be communicated to a person who has not previously had the disease, either directly by means of the discharge from a primary sore, or more indirectly through the secretions of a person affected with secondary symptoms.

That this latter mode of communication is not so common as the former, and appears to take place in general only when the part from whence the secretion is derived, is in a state of increased or unhealthy action.

That under the circumstances last named, any open sore or abraded surface on a syphilitic patient may furnish an inoculable secretion.

That such open sore or abraded surface, may be caused by mechanical irritation, by any secondary form of eruption, by a vaccine vesicle, or by a local suppurating syphilitic sore, in a person previously syphilitic.

That the blood of a syphilitic patient *may* communicate syphilis to a person previously unaffected with the disease.

That the cow-pox and syphilis *may* be inoculated at one and the same time, and that when such a twofold inoculation does take place, the results are, in some respects, analogous to those which follow the inoculation at the same time of an infecting and a suppurating sore.

That the pure vaccine lymph, even from a syphilitic subject, will not communicate syphilis.

This communication is illustrated by two coloured plates beautifully executed.

XVIII. *Cases Illustrating the Causes and Effects of Fibrinous Obstructions in the Arteries, both of the Brain and of other Organs.* By SEPTIMUS WILLIAM SIBLEY.—An abstract of this communication is published in the number of this Journal for October, 1861.

XIX. *Case of Irideremia Totalis.* By EDWARD CHARLES HULME.—The subject in this case was a man twenty-two years of age. The complete absence of the iris in both eyes was confirmed by examination with a lens and with the ophthalmoscope. There was no intolerance of light, and the man was able to read bourgeois type (No. 6 of Jager's scales) clearly at six inches distance.

A plate is added to this communication representing the eye magnified, and also its ophthalmoscopic appearance.

XX. *A Case of Tetanus of nearly Fourteen Months' Duration.* By DANIEL MEADOWS.—The case whose history is given in this paper is certainly a very interesting one, but the symptoms and origin as well as the duration of the disease, it seems to us, are not those of true tetanus.

W. F. A.

BIBLIOGRAPHICAL NOTICES.

ART. XV.—*A System of Surgery; Pathological, Diagnostic, Therapeutic, and Operative.* By SAMUEL D. GROSS, M. D., Professor of Surgery in Jefferson Medical College, &c. &c. Illustrated by twelve hundred and twenty-seven engravings. Second Edition, much enlarged and carefully revised. In two volumes. Philadelphia: Blanchard and Lea, 1862. 8vo. pp. 1062 and 1134, including a copious index.

THE prediction we confidently made in regard to the early exhaustion of the first edition of the System of Surgery of Professor Gross has been justified in the appearance of a second within two years and a half of the date of the original publication. There could be little doubt as to the success of a comprehensive and richly illustrated text-book on surgery from an author and teacher of the position and experience of Dr. Gross, and still less as to the wide and rapid circulation of a work which was not only the most attractive of its class to the student and young practitioner, but was really the first treatise intended "to embrace the whole domain of surgery" that had been produced in this country.

No competitor has since appeared from our native press, nor has any similar publication yet reached us from abroad, so that the field is still clear for the new edition. A very slight examination of our author's pages will afford abundant evidence that he has not relaxed his efforts in their preparation for reissue; and that he has considerably increased the value of his treatise, as a "System of Surgery," by the care which has been bestowed upon its revision, and by the extent and character of the additions which he has made to it. The statement of the preface is fully sustained that every chapter has been carefully revised, a large amount of new matter introduced, and nearly three hundred illustrations, many of them entirely new, have been added. At least two hundred pages of additional text have been introduced beside the wood-cuts; and yet, on account of the employment of a smaller type, the volumes have been reduced about one hundred pages each, in actual bulk.

Among the important topics, that of gunshot wounds is especially mentioned in the preface as having received particular attention. This fact may be noticed in the sections and chapters on the wounds of particular regions, as well as in the general section on the subject.

The chapter on diseases and injuries of the bones, especially the section on fractures, has been materially extended and improved. This improvement is still more observable in the chapters on diseases and injuries of the joints, including dislocations, and particularly in the section on coxalgia.

A similar alteration may be noted in the chapter on diseases and injuries of the extremities, especially the latter part of it, which treats of the lower extremities, and in the chapters on special excisions of the bones and joints, and on special amputations.

The additions here referred to, as well as many others in different chapters which need not be detailed, not only supply omissions in the previous edition, but, in giving the results of recent observations and conclusions, serve to maintain the position of the work as an indicator, in some degree, of the progress of surgery, more especially in questions of practice.

The only change in the order of arrangement, that we have noticed, is an advantageous one in the transposition of the chapters on diseases and injuries of the joints, and on diseases and injuries of the bones, respectively; the previous order being inverted, so as to terminate the first volume with the discussion of the latter topic, and to commence the second volume with the consideration of the former.

The large number of additional illustrations, many of them engraved expressly for the purpose, which have been distributed throughout the volumes, are, like all the others in the work, admirably executed, and are generally well selected. They are so introduced, from chapter to chapter, as to add decidedly to the usefulness and interest of the sections, in many places where the text remains unaltered. Some advantage has been gained also by the substitution of better wood-cuts in at least one or two instances.

The account which is here presented will afford a sufficient idea of the nature and extent of the improvement in the edition before us. It certainly presents an encouraging prospect of similar progress in the future editions, and justifies the hope, no less than the expectation, of an equally rapid succession of them.

We do not pretend to regard the "system" of Professor Gross as the most desirable exemplification of surgical teaching in the United States, or as a model text-book. Although authors' names are continually mentioned and their observations discussed, specific references are too imperfect to satisfy the reader who looks beyond the individual teacher. The author is unnecessarily dogmatic in matters of opinion, wherein exclusive views may only confuse inexperienced students, without convincing those who are more advanced. He indulges, also, in a few peculiarities of doctrine, and especially of nomenclature, the correctness of which we cannot agree to. Still, we do cordially admire his comprehensive treatise as a monument of ability, industry, and enterprise in author and publishers; and we respect it even more as the successful pioneer in a field, which ought ere this to have been occupied by competitors of yet higher aim and greater calibre. Until his excellent example and its prompt reward have aroused the needed emulation, we shall continue to be thankful for what has been received in the portly, closely printed, and beautifully illustrated volumes of Dr. Gross; and unhesitatingly recommend them to the medical student and practitioner of this country, as presenting the best text-book on the theory and practice of surgery within their reach. E. H.

ART. XVI.—*Reports of American Institutions for the Insane.*

1. *Of the Pennsylvania Hospital for the Insane, for the year* 1860.
2. *Of the Friends' Asylum, Frankford, for the fiscal year* 1860–61.
3. *Of the Pennsylvania State Hospital, for the year* 1861.
4. *Of the Mount Hope Institution, for the year* 1861.
5. *Of the Central Ohio Lunatic Asylum, for the year* 1861.
6. *Of the Southern Ohio Lunatic Asylum, for the year* 1861.
7. *Of the Eastern Asylum, Kentucky, for the year* 1861.
8. *Of the Michigan Asylum, for the years* 1859 *and* 1860.
9. *Of the Vermont Asylum for the Insane, for the fiscal year* 1860–61.
10. *Of the Maine Insane Hospital, for the year* 1860.

1. IN the rapid progress of development of the modern system of treatment in mental disorders, the Managers of the *Pennsylvania Hospital for the Insane*, as has been shown by papers in preceding issues of this Journal, have recently, for the first time in America, if not in the world, begun the experiment of disconnected and somewhat remotely separated buildings for the patients of the two sexes. A trial of some years will be necessary to a complete demonstration of the merits or the demerits of this plan. The report before us was issued after an experience of but one year, and in the opening remarks, it is stated that the experiment, thus far, "has been entirely satisfactory, and the advantages which were hoped for from the new arrangement have been fully realized. The usefulness of the Hospital and the comfort of the patients have already been essentially increased, and there is good reason to believe that each coming year will be marked by steadily augmenting benefits to the afflicted, and show results that

must be truly gratifying to every one who has either by subscriptions, or in any other way, contributed to the accomplishment of this great work."

The old building, formerly occupied by both men and women, has been extensively repaired for the exclusive accommodation of women. "While the general air and appearance of the Hospital have been greatly improved, its arrangements for management and classification have been rendered very superior to what they ever were before." This building, like the new one occupied by men, has "sixteen distinct wards for patients, each ward having all the necessary conveniences for comfort and treatment, and thus giving facilities for a thoroughness of classification not before attained."

The subject of classification leads Dr. Kirkbride to the following very appropriate remarks:—

"The only proper classification of the insane must be based on the mental condition and social traits of individuals. Those whose society would most benefit each other, and have the least chance of injurious influence, should be together, and then great good instead of harm very often results from the association, while those whose proximity would be hurtful, must be kept separate. There was a time when, in some institutions, classification was based on ability to pay; but a moment's reflection would satisfy any one that the greatest wealth might be associated with the most repulsive habits, while in this country of changes, the best qualities of head and heart, and all that makes social life bright and cheerful, may often be found without much of this world's goods. There are extraordinary comforts and surroundings that every institution should be able to give to those who have the desire and ability to incur the expense, but this can in no way interfere with the obvious advantages of a minute and thorough classification."

	Men.	Women.	Total.
Patients at the beginning of the year . .	132	122	254
Admitted in course of the year	131	80	211
Whole number	263	202	465
Discharged, including deaths	112	79	191
Remaining at the end of the year . . .	151	123	274
Of those discharged, there were cured . .	52	46	98
Died	15	11	26

"Of the deaths, five resulted from acute mania; six from the exhaustion induced by chronic mania and enfeebled digestion; five from apoplexy; four from pulmonary consumption; four from organic disease (softening) of the brain; one from epilepsy; and one from old age."

Under the head of "Premature Removals," mention is made of that persistent, and—judging from their frequent and urgent expression of it—*strong* desire to return to their homes, which is a prominent characteristic of many patients; and in reference to it, the following distinction is drawn:—

"This morbid desire to leave an institution is widely different from the natural wish to be at one's own home, and in the society of one's family, and which is much more moderate in its character and manifestations. The first is constantly found before convalescence has commenced, or in its very early stages; while the latter belongs to the state which approaches complete restoration. It is of almost daily occurrence that patients who in the early stages of convalescence talked of little but getting home, have, when quite well, been found as anxious as could be desired to avoid all premature action, and have willingly assented to every suggestion intended to secure their perfect and permanent restoration."

Believing that, of all the various components of an enlightened scheme of moral treatment, no one is second in importance to a liberal course of evening entertainments such as, for fifteen years, has been given at this institution, we consider it as important as it is interesting, again to mention the subject, and to exhibit the record of the gratifying success which has here attended the practice.

"The sixteenth course, now in progress, will occupy at least two hundred and fifty evenings, one-half the number being at 'the Department for Males,' and as many at 'the Department for Females,' on alternate evenings. As heretofore, they

are made up of lectures on a great variety of subjects, exhibitions of very superior dissolving views, musical entertainments and various other means for passing an hour pleasantly, which an enlarged supply of apparatus, and the generous sympathy of a number of kind friends have placed at our disposal. The entertainments at the two departments being on alternate evenings, whenever anything of special interest occurs at either, or as often as may be deemed desirable, parties of from twenty to forty pass from one house to the other, thus approaching more nearly the habits of regular lecture goers, who are differently situated, and giving additional variety to the course. A pleasant evening walk, to and fro, and the lecture-room entertainment, are often an effectual mode of changing the current of thought, which naturally would have place in the wards.

"It has been a subject for frequent remark during the past year, that a lecture-room, which formerly contained comfortably those who were disposed to attend, when all the patients were in one building, is now almost as full of females alone, while the enlarged lecture-room at 'the Department for Males' is correspondingly filled. At least twenty per cent. more patients of each sex attend than under the old arrangement, and without the slightest diminution of the good order which has so generally prevailed. As usual, these evening entertainments have been under the special charge of Drs. Smith and Jones, Assistant Physicians, whose interest in their success has added greatly to their attractiveness.

"Those very competent to judge have expressed the opinion, that the patients in this hospital are in the habit of seeing, nearly every evening, an exhibition certainly not inferior in character, and in some respects superior, to what has been found sufficiently attractive to fill some of the largest lecture-rooms in our great cities, nor would those who have attended both, hesitate to add, that in the matter of quiet, good order, and respectful attention, the hospital audience does not suffer by a comparison."

Among the recent novelties at this hospital, is a reception ward in which patients, upon admission, are detained a suitable length of time before placing them in their appropriate places among the other inmates. The advantages of this new arrangement are mentioned in the subjoined extract.

"Any one who will reflect for a moment, may imagine how great may be the shock to persons of sensitive feelings, who may never before have passed a single day with entire strangers, on finding themselves among a large company of people entirely unknown to them, and where all the surroundings are totally different from anything to which they had been accustomed. This would be still harder to bear, if, as might occasionally happen, they were left in this novel position to entertain themselves—an excited imagination giving a morbid and probably painful view of the place and its inhabitants. The arrangement now proposed, it is hoped, will prevent most if not all of this, and a proper degree of tact on the part of those having charge of patients in the reception wards, if it does not make the first impressions of a new comer absolutely pleasant, may at least prevent their being painful and injurious."

We find the following just remarks near the close of the report:—

"In the matter of visits among the insane, it is not intended to say that every well-disposed person is calculated to effect all the good that might be hoped for, from well-intended efforts. A cultivated mind is not alone enough for this work; nor is a good heart, nor deep religious impressions, nor always even all combined, desirable as each one of them is. There is something more necessary to make such labour specially profitable—something occasionally found when least looked for, or strikingly absent, when most desirable—and which may be described by the single word *tact*, a nice perception of the character, condition, and wants of others, and which, joined with the other qualities already referred to, makes this a field for labour which any one, who engages in it heartily, will soon discover to be much higher than ordinary works of benevolence, just as mind is superior to matter, and mental disease a greater sorrow than mere physical infirmity."

2. The statistics of the *Friends' Asylum* for the year ending with the close of February 1861, are as follows:—

	Men.	Women.	Total.
Patients at the beginning of the year . .	29	29	58
Admitted in course of the year	7	11	18
Whole number	36	40	76
Discharged, including deaths	7	8	15
Remaining at the end of the year . . .	29	32	61
Of the discharged, there were cured . . .	4	4	8
Died	1	1	2

Died of epilepsy, 1; cancer of the breast, 1.

In his remarks upon the causes of insanity, after having spoken of hereditary predisposition, Dr. Worthington says: "In other cases the predisposition, instead of being inherited may be acquired, and in these cases may also be transmitted to the offspring without ever being developed into an attack of insanity in the individual with whom it originated. The experience of the asylum furnishes some remarkable instances of this kind. Three brothers of one family have been, at different times, and three sisters of another, are at present patients in the asylum, and in neither family had insanity been known to exist previously."

"The lectures and exhibitions with the magic lantern have been continued during the winter."

"During the past summer a large circular mound of earth was made in the yard, connected with the lodge for excited male patients, and planted with flowers. This yard was occupied daily, in pleasant weather, by this class of patients, who, strange as it may appear, offered the plants no injury, and seemed gratified with having them near. Among the same class of female patients, plants, in pots, occupying the windows during the winter, and pictures on the walls, have contributed greatly to their gratification, and in no instance have they been injured by them."

Of course not. Wherefore should they injure that which they cannot suspect of aiding or abetting supposed injury to themselves? wherefore destroy the flowers which bring pleasure to their senses and the calm, and quiet, and grateful influences of nature to their hearts?

"Among the means introduced during the past year, may be mentioned an aquarium, placed in the library and stocked with a collection of fresh water fishes and aquatic plants. It affords an opportunity of observing the habits of these interesting little animals, which is frequently enjoyed by the patients. The games of cricket and foot-ball have also been used, for the first time, by our inmates, and have been participated in with much spirit by a considerable number of the men. During the fine afternoons of autumn, and even occasionally on fine days through the winter, the lawn in front of the asylum buildings has presented an animated spectacle of between twenty and thirty patients and attendants engaged, either as spectators or performers, in one of these exhilarating pastimes."

3. In the course of the year 1861, the *State Lunatic Hospital of Pennsylvania* became, for the first time, so full, that it was necessary to discharge some of the incurable patients, to give room for applicants whose cases presented a hope of restoration.

	Men.	Women.	Total.
Patients at the beginning of the year . .	153	138	291
Admitted in course of the year	84	50	134
Whole number	237	188	425
Discharged, including deaths	86	59	145
Remaining at the end of the year . . .	151	129	280
Of the discharged, there were cured . . .	15	15	30
Died	8	8	16

Died from the exhaustion of chronic mania, 9; consumption, 4; epilepsy, 1; gangrene of the lungs, 1; "disease of the brain," 1.

"The general health of the household throughout the year has been remark-

ably good, and the freedom from all acute disorders was greater than we could have anticipated."

"Our immediate proximity to the camp has seemed to require of us the reception of a number of cases for which no other accommodations could be had, and while the great majority of these have required very temporary shelter and little treatment, many have remained with us for weeks, and for some it may become the residence for months, or even years."

"From the very commencement of the national troubles, every appliance of the hospital which could be of service has been freely placed at their disposal. During the spring and summer, thousands of pounds of beef and ham were cooked, and hundreds of gallons of coffee were made for those who were pushing onward to Washington, or who were returning; whatever articles could be made for the sick were prepared whenever they were desired; during the fall and winter, thus far, all from the camp who desired it have had the opportunity of bathing and of using the appliances of the laundry, and to none have we denied the privilege of becoming acquainted with the arrangements of the hospital.

"While thus affording to those of our own State every facility they desired, we have not been unmindful of the obligations of citizenship in ministering to those of other States, Ohio, Michigan, Wisconsin and Minnesota, who, by the necessities of their position, required such assistance as it was in our power to afford."

We make one extract from Dr. Curwen's exposition of the nature and characteristics of insanity.

"No definition of insanity has ever yet been given which would clearly and distinctly include all the variations to be met with. Certain forms may be very readily recognized and very clearly described, but there is still a large class of mental disorders which defy all accurate definition and are a source of grievous perplexity to all who have not made them their special study. In this class are included all those cases of mental disorder which have proved such obstacles to judges, lawyers and juries, and have even caused much division of opinion among medical men.

"To arrive at correct conclusions relative to this latter class, it does not become us to set up some imaginary standard, clothed with certain characteristics which we conceive should belong to it, but we should carefully and judiciously compare the conduct, character, the expressions and general tone and peculiarities of the conversation with what the individual was before the character we are now examining was developed; for we must constantly bear in mind that insanity is not some new thing engrafted on the individual, but in all cases is a perversion of his mental and moral powers, made known by the change in his demeanor, his affections, his passions and all those peculiar characteristics which go to make up the individual man.

"It may not be possible in this way to come at once to a conclusion in all cases, but justice to the individual and the cause of truth demands that such a course should be rigorously pursued. There may be, as there have heretofore been, cases which for a time will apparently fail to be decided by this criterion, but if the investigation is pursued cautiously, prudently, and in the spirit of an earnest seeker after truth, the result cannot be long doubtful.

"By this criterion we shall be able to decide those cases also for which medical men, or more strictly, physicians for the insane, have been said to have invented a term which should serve as a cloak for crime, and prevent the execution of the penalty of the law on men who have committed gross violations of the rights of their fellows.

"That such a doctrine has been used by ingenious advocates to attempt to screen great offenders cannot be denied; but because such doctrines have been abused by those who were more anxious to serve their client than to advance the cause of truth and justice, only proves that the best objects may be perverted to the worst purposes.

"The statement is not that men who have led a vicious life until their consciences are seared, as with a hot iron, are morally insane, but that men who have led correct and upright lives, have been all that could be desired as mem

bers of society, have, after an attack of fever or some severe bodily disease, had their moral powers so perverted as to lead them to the commission of acts at which formerly they would have revolted, and their mental powers so weakened as to prevent the perception of the incongruity of their actions with their professions."

4. We gather from the report of the *Mount Hope Institution*, the following tabulated history of the operations of that hospital during the year 1861.

	Men.	Women.	Total.
Patients at the beginning of the year . . .	72	115	187
Admitted in the course of the year . . .	74	47	121
Whole number	146	162	308
Discharged, including deaths	63	48	111
Remaining at the end of the year . . .	78[1]	119[1]	197
Of the discharged, there were cured . . .	23	19	42
Died	6	8	14

The diseases terminating fatally are not reported.

Aside from the above, 4 cases of mania à potu were in the hospital at the beginning of the year, and 31 were received in the course of the year. They were all discharged, recovered.

Any cause, of what nature soever it may be, which profoundly agitates the public mind, directly produces many cases of insanity, and often gives shape and character to the cases which originate in other influences. Hence it might reasonably be expected that the exciting political condition of our country during the last twelve or fifteen months, would considerably contribute to the populations of the institutions for the insane. The Mount Hope Institution, being near Baltimore, is at a somewhat central point of the startling events of the history of the past year, and consequently would be among the first of such establishments to be affected by their influence. In the report before us, Dr. Stokes writes as follows upon this subject:—

"In most of the cases occurring since the 19th of April, '*excitement of the times*' has entered more or less directly into the causation of every attack. Our experience therefore fully corroborates the remark of Pinel, that it would not be difficult to retrace, among the admissions into our insane establishments, the form of insanity especially appropriate to the exaltation of ideas prevalent at each epoch. One is the victim of the monomania of fear, and entertains the delusion that he is suspected of being a spy. He passes his days and nights in constant apprehension of being arrested and imprisoned. Fearing to go to sleep, he lies awake listening to every noise, and as his ear catches the sound of the distant footstep, he becomes dreadfully terrified and alarmed. His morbid and affrighted imagination conjures up before him the dreaded spectre of an officer intent upon his arrest. He begs to be permitted to deliver himself up to the authorities, and yet trembles when the desired opportunity is promised him. Another entertains the belief that he is suspected of disloyalty to the Government, and imagines that the eyes of every passing stranger are specially directed upon him—noticing and watching his every word and action. Dreading the confiscation of his property, he assigns over all he possesses to his friend. Then, to escape the dreaded disgrace of imprisonment, he eludes the vigilance of his family, and in a short time is brought back, having made an unsuccessful attempt to drown himself. A third loses his mind in consequence of the startling events of the 19th of April. He conceives the idea that he is believed to have taken an active part in the movement of that day, and to escape arrest, imprisonment, and execution, he makes a desperate attempt at suicide. With a razor he makes a ghastly gash in his throat, severing the trachea, but missing the carotids. For a whole month after this, this terrible fear overshadows his mind,

[1] These numbers are copied from the report; but, according to the preceding figures, they should be 83 instead of 78, and 114 instead of 119.

and the suicidal propensity abates nothing of its determined character. Three several times he tears the wound asunder, by the violent moving and twisting of his head, though his hands are confined in the muff, and he secured in his bed. By keeping his head firmly planted and nestled in an apparatus well wadded and stuffed all around, and by having an attendant beside him night and day, the wound is maintained in apposition and finally perfectly healed. It united, leaving scarce a scar, and the patient fully recovered his mind. A fourth is the subject of aural delusions. As soon as he drops off to sleep at night, he is roused from his slumbers by awful sounds in the far distance. Night after night he passes in intently listening to the terrible clash of armies in deadly strife. He imagines he hears the distant roar of artillery, the heavy tramp of thousands of horses, and the deadly rush of cavalry. Then reach his ear, with frightful vividness and distinctness, the moans and groans of the wounded and dying, the shrieks of captive women and their cries of anguish and horror."

There is so much difference of opinion among both physicians and lawyers upon the three subjects *homicidal impulse*, *moral insanity*, and *oinomania*, that we need offer neither apology nor further explanation for copying the subjoined extract from the report.

"In the foregoing Table (in the report) we see enumerated *four* cases in which were exhibited that terrible form of perversion of the affective faculties, having a *homicidal* tendency. In all of these instances, actual demonstrations were made fully indicating the morbid propensity. In *three* cases the attempt was directed at the life of the father, in one at that of the wife. They had mostly, for some time previous to the outbreak, been indifferent to passing events, and were sullen, morose, taciturn, and stupid. In all, the paroxysm was sudden, unexpected and unprovoked. They seemed actuated by a motiveless and uncontrollable impulse. These cases of motiveless homicidal insanity, are altogether the most frequent, and must be distinguished from those in which the intellectual powers are perverted, and the murder is perpetrated under some delusion. Esquirol, Gall, and other authors, cite abundant examples of each of these forms. This distinction, however demonstrable to the scientific inquirer, has been reluctantly admitted, and obstinately resisted in courts of justice. It is certainly a matter open, in its practical working, to abuses. Nevertheless, no fact is better established now than that this impulse to kill may exist independently of delusion, and yet be uncontrollable by its unhappy subject. We have had instances of persons who were themselves conscious of having this terrible propensity, and who voluntarily placed themselves under restraint, when they found the paroxysm approaching, to escape the commission of the dreadful act.

"In like manner, lawyers have refused to admit the existence of what Dr. Prichard called '*moral insanity*,' notwithstanding that every writer of authority has recognized and described this well marked morbid condition. We have ranked *nine* cases under this head. We all admit that the designation is open to serious objection, and some term better adapted to express the morbid state characterizing it might be adopted. The term 'moral insanity' has been supposed to signify only an exaggerated state of the passions and propensities, rendering the individual incapable of guiding his actions and controlling his conduct. This has been looked upon so like an apology for crime on the part of physicians that lawyers have ignored it altogether, although this is but one of the forms of that variety of insanity which Dr. Prichard recognized as existing without any aberration of the intellectual faculties. There are, in fact, as many forms of moral insanity as there are feelings and passions. These may be in excess—that is to say, in a state of excitement—without disturbance of the purely intellectual part of our mental constitution. They may be also in abeyance, producing melancholy more or less intense, still without mental aberration. Excess or deficiency of the feelings and passions may, with as much propriety, be regarded as morbid, as excess or deficiency in any of the ordinary functions of the body would, without question, be referred to disease. The fact that a particular form of this malady does occasionally lead to the commission of crime, and is naturally urged in extenuation of it, has created

doubts of its existence as a disordered condition, and induced many to believe that it is simply a disregard of self-control, or a deliberate indulgence in vicious passions: but assuredly the frail nature of human reason predisposes all his faculties and functions to morbid action, and excess of joy or grief (both in themselves natural) are as much entitled to be considered disease, when characterized by irrational conduct, as any other departure from the healthy performance of the brain's functions.

"We have, likewise, no hesitation in comprehending *twenty-one* of the admissions the past year under the term, *Oinomania*. The existence of such a form of insanity is still far from being generally conceded. But when we see a person surrounded by every inducement to pursue the path of rectitude and sobriety, delivering himself up with fury to the abuse of stimulants, which no advice, no reproach, no prayers, no threats, no authority, no experience can correct or alleviate; who converts everything in his possession, his coat, his hat or boots, into brandy; who manifests that insensibility to truth, and rectitude, and self-respect, which is so frequently the characteristic of the confirmed inebriate, surely there must be, at the bottom of this moral debasement and degradation, a disease which but needs favourable circumstances to insure its complete and permanent relief. Such cases would assuredly justify legal interference. And it would not be very difficult to discriminate those instances in which legal restriction is necessary and justifiable from those in which it is not. In connection with the one distinguishing feature of the disease—continual craving for, and the excessive use of, intoxicating liquors—there is the other, viz: a total loss of self-respect and self-control in gratifying the desire. From this results an unfitness for performing the ordinary duties, and for fulfilling the obligations of life. In one class of cases it is characterized by wastefulness and extravagance; in another, by indecent or profane conduct; in another, by theft; in another, by vindictiveness; in another, by a tendency to impulsive violence, which may lead to the commission of murder or suicide; and in all by extreme subtlety and deceitfulness. Such afford unmistakable features, when more or less combined, to guide us in our decisions."

5. From the report of the trustees, which accompanies the report of the superintendent of the *Central Ohio Lunatic Asylum*, it appears that, in the course of the last six years, many and important improvements have been made in the buildings and upon the grounds of that institution.

	Men.	Women.	Total.
Patients in the asylum, November 1, 1860 . .	123	129	252
Admitted in the course of the year . . .	93	76	169
Whole number	216	205	421
Discharged, including deaths	84	85	169
Remaining, November 1, 1861	132	120	252
Of those discharged, there were cured . .	54	53	107
Died	8	7	15

The causes of death, for the year, are not specially stated.

Through an application from Gov. Pierpont, of Western Virginia, to Gov. Dennison, of Ohio, four patients from the territory under the jurisdiction of the former have been received at this institution. "The western part of Virginia being cut off from the privileges at Staunton and Williamsburg, made this unusual step one of almost necessity, and fully sanctioned in the light of humanity and patriotism."

In regard to the influence of political commotion, Dr. Hills remarks that it "has apparently added a few to our numbers, yet the absorbing interest taken by many in the passing events, has been of decided benefit to them, by the diversion of mind from otherwise overpowering delusions."

A large part of the report is occupied by the statistics of the asylum for the twenty-three years during which it has been in operation. We copy some of the most important of them.

	Men.	Women.	Total.
Patients admitted	1951	1906	3857
Discharged, recovered	987	1013	2000
Died	268	202	470
Between 20 and 30 years of age, when admitted			1391
Between 30 and 40 " " " "			1057
Single			2674
Married			1894
Widowed			251
Cases with suicidal propensity			456
Cases with homicidal propensity			189
Per cent. of cures; men, 54.44; women, 56.65; both sexes			55.47
Per cent. of deaths; men, 14.74; women, 11.29; both sexes			13.03

Causes of Death.—Consumption, 77; diarrhœa, 39; exhaustion of acute mania, 35; epilepsy, 35; dysentery, 33; marasmus, 30, inanition, 29; fever, 24; apoplexy, 19; organic lesions of the brain, 14; inflammation of the lungs, 13; typhomania, 11; general paralysis, 10; exhaustion of chronic mania, 10; suicide, 9; palsy, 8; anæmia, 6; atrophy, 5; dropsy, 5; erysipelas, 5; hydrothorax, 4; disease of the heart, 4; hemorrhage from the bowels, 3; exhaustion and general decay, 3; cancer, 3; ulceration of the bowels, 3; chronic peritonitis, 3; hepatitis, 3; inflammation of the stomach, 3; inflammation of the brain, 2; pericarditis, 2; exhaustion from journey, 2; caries of the vertebræ, chronic bronchitis, bilious colic, cancer of the uterus, inflammation of the kidneys, gangrene of the face, variola, organic disease of the stomach, and acute mania, 1 each; cause not assigned, 2.

The extract relating to the influence of intemperance which we give below, will be found interesting.

"Intemperance is a frequent, direct cause of insanity, but I believe it to be much more fearful in its influence in laying broad and deep the foundations of constitutional insanity. Many instances come to light, on close examination, in which even temporary intemperance of the parent has caused constitutional defects in the offspring—sometimes physical, and at other times mental. In one case of insanity represented as *not constitutional*, but believed from *its character* to be so, it appeared on full investigation that the father had been a very hard drinker from early life, and that one son, although capable of doing business, was of dull intellect; the second was our patient, having become insane at about thirty years of age, and is probably incurable. The third son was demented from an early age, and is now in a county infirmary. The fourth child has epilepsy, and is imbecile. The two oldest are married, having children, some of whom can scarcely hope to escape the penalty in after years.

"In another case presenting evidences of constitutional taint, inquiries failed to develop hereditary predisposition. The patient died. In a few months his brother was sent to us, also represented as not hereditary. Further investigations developed the fact, that in the earlier years of the father's married life he was strictly temperate, had four children, all yet remaining healthy and sound. From reverses of fortune he became discouraged and intemperate for some years, having in this period four children, two of whom we now had received into the asylum; a third one was idiotic, and the fourth epileptic. He then reformed in habits, had three more children, all now grown to maturity, and to this period remaining sound and healthy.

"From another county a parallel case came to light—four children born to the parents in a period of intemperance, suffering the consequences. The first a daughter, grown up and married, having three children before insanity appeared. It then was developed slowly, and without any apparent direct cause. After two or three years, it settled into dementia, and she was discharged as incurable. The second one, a daughter also, and married, with two children, was brought to us in a state of acute puerperal mania, and after six months' treatment was discharged recovered, and still remains so after three years lapse of time. I have little doubt, however, she will relapse at some future period. The

third, also a daughter, is an idiot, now mature in years. The fourth died when young, with 'fits.'

"Four children born previous to the period of intemperance, and two since reformation, are all sound and healthy."

We infer, from the language of the report, that two buildings for gymnastic exercises, one for either sex, have recently been constructed.

"Weekly lectures, with magic-lantern, or other means of illustration, will be immediately resumed for the winter." Dancing parties are given "not oftener than once a week;" and it is designed to have "a weekly musical entertainment, instrumental and vocal."

6. The unusually brief report of Dr. McIlhenny, of the *Southern Ohio Lunatic Asylum*, contains but very little matter of professional interest.

	Men.	Women.	Total.
Patients in the asylum Nov. 1st, 1860	82	75	157
Admitted in the course of the year	45	54	99
Whole number	127	129	256
Discharged, including deaths	49	48	97
Remaining Nov. 1st, 1861	78	81	159
Of the discharged, there were cured	30	29	59
Died	5	3	8

The asylum became so much crowded with patients, that it was found necessary to discharge some of the incurables in order to make room for curables.

"An omnibus, for the purpose of which an appropriation was made at the last session of the legislature, has been procured, and will be quite an addition to the other means of amusing and exercising the patients."

"The grounds are now finished, so far as grading and the construction of roads are concerned. We have planted, the past season, quite a number of trees, and considerable has been done towards improving and beautifying the surroundings."

7. The most important tabular medical records of the *Kentucky Eastern Lunatic Asylum*, for the year terminating with the close of September, 1861, are as follows:—

	Men.	Women.	Total.
Patients at the beginning of the year	134	98	232
Admitted in the course of the year	29	19	48
Whole number	163	117	280
Discharged, including deaths	26	17	43
Remaining at the end of the year	137	100	237
Of the discharged, there were cured	9	8	17
Died	11	7	18

Died of phthisis, 6; exhaustion, 3; general paralysis, 3; dropsy, 2; marasmus, 2; apoplexy, 1; disease of the heart, 1.

But one of the patients who died had been insane less than three years. The average age of all who died was 41.23 years.

"Every day's experience," says Dr. Chipley, "strengthens and confirms the opinion I have heretofore expressed, that moderate, well-regulated labour is one of the most important features in the discipline which should govern the insane. It is curative with the more fortunate class, palliative with all. It dispels ennui, promotes physical vigour, improves the appetite and digestion, secures sound sleep, breaks the chain of morbid thought, wins the mind from its erratic wanderings, or elevates it from the melancholy gloom which idleness almost surely deepens. In any aspect in which it can be viewed, it would be difficult to over-estimate the importance of labour."

The number of patients in the asylum is greater than can be properly accommodated, and admission has been refused to more than one hundred applicants. The report contains an urgent appeal for an enlargement of the building.

A kitchen, bakery, &c., have been recently erected, and now no fires are kept in the hospital proper, so that it is "almost absolutely fire-proof."

The report is accompanied by a large topographical map of the grounds belonging to the institution.

8. The *Michigan Asylum for the Insane*, although but "three divisions of the south wing" were at that time completed, was opened for female patients on the 29th of August, 1859. On the 13th of March, 1860, the first male patient was received. The records of the institution from the dates above-mentioned to the 30th of November, 1860, furnish the following results.

	Men.	Women.	Total.
Patients admitted	57	84	141
Discharged, including deaths	10	22	32
Remaining	47	62	109
Of the discharged, there were cured	6	14	20
Died	2	1	3

In allusion to the assigned causes of mental disorder in the patients who had been admitted, Dr. Van Deusen says:—

"The most notable feature is the great prominence which 'ill-health' has assumed, as a cause of insanity. Aside from these cases, a large proportion of those admitted were more or less seriously diseased physically, when received, and nearly all required immediate attention to some bodily ailment. In this respect the personal appearance of the patients presented for treatment at this institution, has been in striking contrast with our experience elsewhere. The extent to which malarial influence, in many instances, had operated, either directly as a cause of mental alienation, or indirectly by inducing a general cachexia, is a most troublesome complication, especially during convalescence. In perhaps no class of cases in which insanity has a directly physical origin, can the connection between cause and effect be so easily traced and recognized as in these."

In regard to the utility of manual labour, he says:—

"During convalescence, in very many cases it becomes highly curative; and to the comfort and health of a large majority of the incurable, it is absolutely essential. There are now in the institution two men who were described to us on their admission, as being fierce as 'wild beasts.' They had for years been unaccustomed to clothing, and so violent and destructive as to require constant confinement in a cell. At present both work out almost daily, and exhibit no special uneasiness, except when occupied and confined to the building."

Dr. Van Deusen's report is well adapted to those who will mostly be its readers—the people of a State within the borders of which no establishment for the insane has heretofore existed; but to the readers of this Journal, who, for the last score of years have plodded—or, at least, have had an opportunity to plod—through the reports of kindred institutions, it presents, as must be expected, but little of novelty.

9. From Dr. Rockwell's brief report of the *Vermont Asylum for the Insane*, for the fiscal year terminating with the close of July, 1861, we make such extracts as are the most important in a professional or historical point of view.

	Men.	Women.	Total.
Patients at the beginning of the year	217	219	436
Admitted in course of the year	83	57	140
Whole number	300	276	576
Discharged, including deaths	70	68	138
Remaining at the end of the year	230	208	438
Of the discharged, there were cured			56
Died			32

Since the opening of the asylum 3308 have been admitted, 2870 have been discharged, and 438 now remain. Of the 2870 discharged, 1547 have recovered.

"For several years the buildings have been so crowded, that we have experienced the want of additional room to furnish all the accommodations necessary for the comfort and restoration of the inmates. By the enlargements which have been made this year, in the addition of nearly one hundred rooms, we can furnish suitable apartments for all the patients, and our means of classification and facilities for cure have been greatly increased.

"Insanity, like other diseases, requires early treatment, in order to insure success. Though this fact is more generally understood than formerly, still there is frequently an unfortunate delay in placing the patient in the most favourable situation for recovery. It is hoped that no friend of the insane, through mistaken kindness, or false pride or prejudice, or any other inexcusable reason, will keep the patient at home after the insanity is fully developed, but unhesitatingly place him in an institution adapted for his restoration.

"Among the causes which tend to produce this afflicting malady, intemperance has long been known to be one of the most prolific. Its effects are not confined to that form of insanity, familiarly known as delirium tremens. In noticing the causes of insanity, many cases are attributed to 'loss of property,' 'domestic affliction,' 'ill-health,' and similar causes, all of which are frequently produced by intemperance. Insanity and death are both more liable to be produced at the present time by intemperance than formerly. The recent developments of the poisonous adulteration of alcoholic stimulants, should be sufficient to deter every one from the use of all, excepting as unavoidable medicines, and then the purest liquors only should be used."

10. In the report of the *Maine Insane Hospital*, for the year ending November 30th, 1861, the records which we are accustomed to transfer to our columns are as follows:—

	Men.	Women.	Total.
Patients at the beginning of the year . .	131	109	240
Admitted in course of the year	77	58	135
Whole number	208	167	375
Discharged, including deaths	74	49	123
Remaining at the end of the year . . .	134[1]	118[1]	252
Of the discharged, there were cured . . .	32	23	55
Died	15	12	27

The immediate causes of death were, phthisis pulmonalis, 5; dropsy, 4; *paralysie générale*, 3; diarrhœa, 3; exhaustive mania, 3; congestion of the lungs, 2; erysipelas, 2; apoplexy, 3; epilepsy, 1; inflammation of the bowels, 1.

The subjoined extract is taken from Dr. Harlow's remarks upon sympathetic disorder of the cerebral functions.

"Of the various organs which enter into the arrangement for digestion, no one, if we except the stomach, sympathizes more directly with the brain than the liver. The secretions of this great emunctory play a wonderful part in the movements of the grand mental machinery. Every one knows how changeable are the moods of mind—now buoyant and cheerful, with scarcely a ripple to mar the peaceful and happy flow of spirits; now grave and sad, with no pleasing or agreeable thoughts; now full of hope and joy; now fear and apprehension fill the mind with evils of the darkest hue, and often plunge us into the vortex of despair. These, and various other mental moods, I believe, depend in no inconsiderable degree upon the condition of the biliary secretion operating upon the brain, either through the circulation or the sympathetic nerves, or the two combined. All medical men who are at all conversant with the inmates of a lunatic asylum, cannot fail to observe that a very large class of these persons suffer from an abnormal condition of this organ. It is distinctly seen in the class of cases termed melancholiacs or lypemaniacs. Great sympathy is also felt in the brain, when any other of the large organs of the body become diseased. It is very common to find insane persons suffering from phthisis pulmonalis, or other

[1] The report says 133 and 119, but such is not the deduction from the preceding numbers.

pulmonary affections, which evidently has much to do in producing and keeping up the mental derangement. It is not unfrequent to find organic disease of the heart accompanying insanity, and acting as its cause. The effect of disease in either of these great vital organs must be obvious. Depuration of the blood, so essential to a healthy action of the great mental organ, cannot go on perfectly when the functions of the heart and lungs are impaired or obstructed."

The asylum has for several years been fully occupied by patients, and admission has been refused to many applicants, even, in some instances, when they "had arrived at the door."

In the course of the past year the method of heating the buildings has been changed from hot water to steam; and an apparatus for forced ventilation, with a centrifugal fan, twelve feet in diameter, has been introduced. P. E.

ART. XVII.—*Report to the Secretary of War of the Operations of the Sanitary Commission, and upon the Sanitary Condition of the Volunteer Army, its Medical Staff, Hospitals, and Hospital Supplies.* December, 1861. 8vo. pp. 107.

Rules for Preserving the Health of the Soldier. Second Edition, July, 1861. 8vo. pp. 12.

Report of a Committee Appointed by the Sanitary Commission to Prepare a Paper on the Value of Vaccination in Armies. December, 1861. 8vo. pp. 32.

Report of a Committee Appointed by Resolution of the Sanitary Commission to Prepare a Paper on the Use of Quinine as a Prophylactic against Malarious Diseases. 1861. 8vo. pp. 21.

Report of a Committee of the Associate Medical Members of the Sanitary Commission on the Subject of Continued Fevers. December 6, 1861. 8vo. pp. 23.

Report of a Committee of the Associate Members of the Sanitary Commission on Dysentery. February, 1862. 8vo. pp. 40.

THE efficiency of an army will depend almost, if not altogether, as much upon the physical vigour, the health and robustness of the men who compose it, as upon the excellency of their discipline, and the efficiency of their officers, considered in a simply military point of view. Consequently, unremitting attention to the proper hygiene of the camp and garrison becomes as important and necessary a measure as is attention to any of the means universally admitted as essential to fit soldiers for the field, and to insure the success of their combined operations, whether in aggressive or defensive warfare.

In a merely economical light the subject of military hygiene presses itself upon the attention of every government with peculiar force. Its object is to economize the health and life, the vigour and endurance of the soldiery. It must be evident that an army, the most numerous and best appointed, may be as effectually crippled by disease as by the arms of an enemy. History shows to us more than one instance where this actually occurred. Independently of the destruction of life, produced by sickness, the sick themselves are an actual loss from out the ranks of an army, and a very serious encumbrance in all its movements. To supply the deficiency in the personnel of an army thus caused—to maintain the army at its requisite strength—involves a very heavy amount of expenditure; consequently, such means as are adapted to preserve and improve the health, and secure the lives of the soldiers, must necessarily reduce the expenditure incident to invaliding such as have become incapacitated from military service, and of recruiting and drilling new men to supply the vacancies, in the ranks of the army, resulting from sickness and death. "Fewer men would be required, and recruits would more readily join a healthy army. The existence of an army in the highest state of efficiency would give additional security to the country without increasing the cost; the liability to an attack would be lessened; war would be waged with more chances of success, and would sooner be brought

to a close by such an army than by an army suffering from the diseases which have hitherto infested the barrack and the camp."

The facts which have been verified and accumulated by accurate observers among the military surgeons of Europe, and, to some extent, by those of our own country also, prove, most incontestably, that the sickness of soldiers in the field may be reduced "by carefully selecting men; by letting the men, when it is practicable, breathe purer air; by selecting the healthiest sites available for camps; by raising the men in their tents from the ground; by supplying them with purer water; by better medical arrangements."

From all the observations that have been heretofore made, it becomes evident, to use the words of the commission, that the duty of guarding against the defeat of our armies by disease, needs to be undertaken as earnestly, as vigilantly, with as liberal a policy, and with as resolute a determination, as any other military duty. This duty, unfortunately, does not constitute any prominent part of our present system of military medicine; it scarcely, indeed, enters into it. The medical staff of the army are charged with the cure of disease. The prevention of disease—an equally if not more important office of the physician—forms at best but a very subordinate branch of the duties imposed upon the military physician.

To supply to some extent the defects at present existing in the department of military hygiene; defects which, it was to be expected, would be felt to their fullest extent throughout the encampments and garrisons of an immense army, such as that which the United States has been compelled, during the past twelve months, to extemporize, by calling to its ranks, from the peaceful pursuits of civil life, men unaccustomed to, and, including both privates and officers, to a great extent ignorant of, and perhaps altogether indifferent to those precautions which are necessary to insure the health and well being generally of the human frame amid the injurious causes to which, in camp and garrison, it has been suddenly subjected; to guard, as far as possible, against the disastrous consequences it was feared would result from these defects, a commission was appointed, or, perhaps, to speak more correctly, recognized by the late Secretary of War, with instructions to inquire into the sanitary condition of the army of the United States, and present such advice, in respect to its improvement, as the inquiries instituted by the commission should discover to be necessary.

The organization of this commission has given rise to some discussion; with this, however, we have nothing to do. Its objects are "to inquire into the principles and practices connected with the inspection of recruits and enlisted men; the sanitary condition of the volunteers; the means of preserving and restoring the health, and of securing the general comfort and efficiency of troops; the proper provision of cooks, nurses, and hospitals; and other subjects of like nature." These objects are, unquestionably, of the highest importance, and, if successfully carried out, cannot fail to be productive of a saving of health and life in the personnel of the army, calculated to increase its efficiency, and keep up its requisite strength, without the necessity of repeated drafts upon our State volunteers.

Judging of its operations, from the several reports made by the commission since its organization, we are persuaded that its action, thus far, has been eminently wise and judicious. The great defect is that the commission has not the requisite power to cause to be carried out promptly and effectually, the several reforms it has discovered to be necessary in order to place the condition of the army, in a sanitary point of view, upon as favourable a footing as was desirable, and that too in cases where delay was liable to be attended by the most disastrous results. As the commission remark—"The object had in view by it can be effectually accomplished only by the direct action of government—through officers who can order where the commission can only advise. The cause our armies have to defend is alone dearer to the people than are those who have to suffer in its defence. The strength and mobility of the army cannot be sacrificed to the care of its sick and wounded. The sick and wounded should be sacrificed unflinchingly to every unavoidable military necessity; but all the more should they be supplied with whatever mitigation of suffering military necessities leave possible. And these should be furnished them—not as if a hard master were

driving a bargain with them—as in the commutation of a board contract—but as if the love and pity of mothers, wives, sweethearts, and sisters, were exercised with the far-seeing providence, boldness, ingenuity, tact, and industry of true military generalship—Surgeon-Generalship."

From the general report of the commission we extract the following highly interesting remarks on the mortality, diseases, and casualties of the army up to the close of the past year:—

"In the army of the Potomac the average constant number of sick per *thousand* men has been *sixty-three;* in the department of Western Virginia, *one hundred and sixty-two;* in the valley of the Mississippi, *one hundred and sixteen.* The average constant number of sick during the months of August, September, and October, in the regiments east and west, so far as visited, has been *seventy-seven* per thousand. In this number, all relieved from duty, from any sort of physical indisposition, however slight, are included. At this rate, in order to secure a constantly active force of 300,000, the nation must maintain in the field an army of about 325,000.

"The number of sick varies in different regiments from *one-third of one* per cent. to *forty-nine* per cent. The average length of time lost from active duty, in each case of sickness reported, has been a little more than *five* days.

"The health of the volunteers of the army of the Potomac has been slightly better than that indicated by the returns respecting the health of the regular army during the past year. The average health of the entire volunteer force in the field has been inferior to that of the regulars.

"There is reason to think that the most sickness has occurred where regiments, raised in far northern and highland districts, have been removed to lowland, fluvial, and seaboard districts; those, for instance, from Maine and Vermont, the ridge counties of New York, and from Minnesota, being more subject to distinct disease, as well as to demoralization, or ill-defined nostalgia, than others in the army of the Potomac. The healthiest regiments, physically and morally, have been those from the seaboards, as of New Hampshire, Massachusetts, Rhode Island, Connecticut, and New Jersey; those from Rhode Island being probably the most fortunate in this respect, which fact, however, is chiefly due to their superior discipline early in the campaign.

"It is difficult to compare the rate of sickness of foreign armies with that of the volunteers, because it is uncertain what degree of sickness in them places a man upon the sick list. Our volunteer surgeons are, undoubtedly, very accommodating in this respect, probably more so than the surgeons of the regular army, or of foreign armies. It has happened in more than one instance that, upon an order to advance against the enemy being given, every man of a regiment, then on the sick list, immediately reported himself well, was discharged, and shouldered his musket in the line of battle. It is probable that at least one-half those returned as sick, by the surgeons of volunteers, would do the same under similar circumstances, that proportion being excused from duty on account of a cold in the head, severe fatigue, or a slight indigestion.

"In the whole British army, in time of peace, 6.5 per cent. of the force, otherwise available, is reported constantly 'in hospital.' Of the British army in the Peninsula, under the Duke of Wellington, 1808–1814, 21 per cent., or 9,300 of an average force of 44,500 men, was constantly 'sick in hospital.' The number of sick ranged from 9 to 33 per cent. of the whole force at different periods. These rates were exceeded in the British army of the Crimea. To maintain 100 effective soldiers in the field, it there became necessary to provide for 26.6 sick men. The annual rate of mortality was 3 per cent. by wounds, and 20 per cent. by disease. The annual rate of mortality in the British army, at home and in time of peace, was from 1.1 to 2 per cent. in the ten years preceding 1847.

"The average mortality of the army of the Potomac has been, during the summer, at the rate of 3½ per cent., allowance being made for those who die after their discharge, from causes connected with army life. Imperfect data, received from the West, indicate a considerably larger rate for the whole army; probably it will not be far from 5 per cent., if sweeping epidemics should be escaped."

"The following statement exhibits a classification of the cases of disease, in

the volunteer army, during a portion of the campaign; showing, also, the percentage of casualties of all kinds—wounds, accidents, &c.—for the same period, compared with like returns from the army of the Crimea, from April 10, 1854, to June 30, 1856:—

	Army of the Potomac.	Army of the West.	Army of the Crimea.
"Zymotic diseases, per cent.	61.1	76.4	69.8
Constitutional	1.2	.6	.5
Local	30.7	17.3	15.6
Developmental	3.4	3.5	.1
Violence	3.6	2.2	14.0
All cases	100.0	100.0	100.0

"Two most important facts appear on the face of this table: First, the immense disproportion between cases of disease and of violence, fully justifying all that has been asserted as to the loss an army in the field must expect to sustain from these causes respectively, and, secondly, the great excess of zymotic diseases, nearly all of which are, in greater or less degree, preventible by proper precautions. For instance, typhus can be almost certainly averted by systematic attention to cleanliness and ventilation, smallpox by vaccination, and malarious diseases—intermittent fever, &c.—by quinine. It seems apparent, therefore, that it is within the power of government, either by the action of the War Department, or by legislation, to enforce rules that will most materially diminish the waste of efficiency by disease, and the consequent cost of the present war."

We are unable to command the space we should be obliged to occupy were we to attempt a separate notice of the several reports which have been made at the instigation of the Sanitary Commission, by committees of its own members, in conjunction with physicians and others, whose advice and co-operation it has solicited in the accomplishment of the leading objects of its appointment.

The reports to which we refer, and the titles of several of which have been placed at the head of the present notice, are confessedly productions of much merit. More than one of them are on subjects having a vital bearing upon the efficiency and economy of the military forces of our country, which are now, or may hereafter be called into the field. In respect to such of the reports as present what are described by the Commission as "brief essays or hand-books embodying in a condensed form the conclusions of the highest medical authorities, in regard to those medical and surgical questions which are likely to present themselves to surgeons in the field in the largest scale, and which, therefore, are of chief practical importance," we should be mortified in believing there was any actual necessity for their preparation. No one surely should receive the appointment of the responsible position of surgeon in any department of the army who is not perfectly familiar with the actual state of knowledge in respect to every question, whether medical or surgical, that is liable to present itself in the execution of his professional duties. The government had within its reach plenty of the proper material from which to select for the army a well-instructed and efficient medical staff. A staff, no member of which would stand in need, even in the absence of standard works of reference—of the "manuals prepared under the authority of the Sanitary Committee"—excellent as these unquestionably are—to furnish the necessary information or instruction, to enable him to minister, as a physician, with judgment and success to such of the soldiery as may be confined by sickness to the hospital, or as a surgeon, to relieve the sufferings, and save the limbs and lives of those who may be among the wounded on the field of battle. Had the talents and the labour required for the preparation of the reports in question, been employed in the preparation of suitable essays in reference to almost any of the leading questions connected with the sanitary management of the troops, amid the varying circumstances they are liable to be placed, we believe a far more desirable work would have been accomplished—an actually existing want among the surgeons and other officers of our army supplied, and consequently a more certain amount of good produced.

It is a lamentable fact that the importance of hygienic measures is too often

undervalued, and these measures, in consequence, neglected, from an ignorance on the part of otherwise well instructed medical men of the results of accumulated and carefully collated evidence in respect to the true nature, the proper bearing, and positive efficacy of a well arranged and well executed hygienic police. By the non-medical officers of the army sanitary principles of the most positive character are constantly practically ignored.

The report on the Value of Vaccination, in Armies, is one of a most interesting and important character. From the facts adduced by the Committee the following conclusions are arrived at—the correctness of which is fully sustained by an overwhelming weight of evidence.

1. Primary vaccination is a positive protection, within certain limits, against smallpox. 2. There is a period of life when that influence declines; and the history of epidemics teaches that smallpox will attack a variable portion of the vaccinated if exposed to its influence. 3. The mere *possibility* of such a decline renders reprotection necessary. 4. In revaccination we have an almost infallible restorer of that protection, and a preventive of the spread of variolous epidemics. Hence, revaccination in all bodies exposed to variolous contagion is *imperatively* demanded. 5. The operations of vaccination and revaccination are unattended with danger to those subjected to them.

We would join our voice to that of the committee on vaccination, in pressing upon the Sanitary Commission the necessity of making such representation to the proper authorities, as will secure the revaccination of all soldiers who cannot prove its performance upon them within the previous five years, and such arrangements as will place within the reach of the medical officers of the army a constant supply of genuine and efficient vaccine virus.

The report on the use of quinine as a prophylactic against malarious disease, is one replete with interest. The facts bearing upon the subject within the reach of the committee have been carefully collected and arranged by it. From these may be fairly drawn, it is believed, the conclusion, that the power of quinine as a preventive of miasmatic diseases is to be recognized as an established medical fact; and that the article may be employed, not only with entire safety, but with the greatest advantage, even to the saving of life, by healthy persons exposed to malarial influences.

In order, as the committee state, to estimate fully the value of the prophylactic or preventive property of quinine, which is styled by a recent English writer "a modern discovery," it will be useful to rehearse a few well established medical facts.

"*a.* Individuals undoubtedly differ in degree of susceptibility, or in their liability to be attacked by miasmatic disease; but there is no amount of natural vigor of constitution, or positive high health, which will confer immunity against the effects of the poison.

"*b.* The young are usually more liable to the disease than those of mature age.

"*c.* Poisoning from malaria is more liable to take place between the hours of sunset and sunrise, and in those who are fasting, fatigued, or deprived of sleep.

"*d.* After exposure to malaria the attack of disease is not necessarily immediate; a period of *incubation*, varying from six to twenty days, usually intervenes, and during this the individual may enjoy perfect health. The attack, when it occurs, may assume the form of intermittent or remittent fever, or any of the other forms of miasmatic disease, varying in nature and degree of intensity, according to the impressibility of the individual, and the virulence of the poison; or, the amount of poison imbibed may not have been sufficient to cause an explosion of purely miasmatic disease, but only enough to impress the miasmatic or paroxysmal type upon some intercurrent malady occasioned by another cause.

"*e.* After long exposure to malaria, even though no actual attack of sickness may have occurred, a debilitated condition of health is liable to arise, characterized by sallow complexion, diminished strength, and impoverished blood; this is known as *malarial cachexia.*

"Now, it is a well established fact in the experience of American physicians, that the daily use of a small quantity of quinine, say from three to six grains,

in one or more doses, by those who are exposed to the danger of malarial poisoning, will, in most instances, prevent an attack of malarial disease; and that it will always render the disease milder, if it should occur. It will also prevent the development of malarial cachexy." D. F. C.

ART. XVIII.—*Extracts from the Records of the Boston Society for Medical Improvement, with Papers read before the Society.* By FRANCIS MINOT, M.D., Secretary of the Society. Vol. IV. No. 4. (Pamphlet) 8vo. pp. 179—264. Boston, 1862.

ABUNDANT evidence is afforded, in this modest pamphlet, of the activity of our brethren in Boston during the past year. We have only room for a brief mention of some of the more important cases and papers contained in it; premising that we have seldom seen an equal amount of material of more uniform interest and value.

Several instances of cancerous disease of the alimentary canal, at various portions of its extent, are reported; in one, a free communication was established, through the adventitious mass, between the transverse and descending colon. Dr. Jackson relates a case of rupture of the Fallopian tube in a non-pregnant woman, and Dr. Gay one of retro-uterine hæmatocele—a very rare affection in this country. Another singular case is detailed, in which a multilocular cyst was developed from the fundus uteri. A case of bronzing of the skin, connected with enlargement and disease of the supra-renal capsules, is added to those already on record. Three instances of death from softening of the muscular tissue of the heart, without perforation, are reported; in one of them the subject was a man only twenty-nine years of age.

The secretary has very properly grouped together the records of several discussions and reports relating to diphtheria, a topic which must interest every practitioner of medicine of the present day. A case is alluded to here, and more fully detailed in the Appendix, in which a young physician of high standing was cut off by this disease, contracted apparently from a patient; many of our readers will be reminded by it of the very similar fate of Dr. Frick, of Baltimore, a year or two since.

The experience of the members of the Boston Society in regard to the use of ether in puerperal convulsions, seems, on the whole, to have been favourable. An interesting paper, headed "Report of a Committee on the alleged dangers which accompany the Inhalation of the Vapour of Sulphuric Ether," in the Appendix, deserves attention. Dr. Bowditch brought before the Society, in July last, a new anæsthetic agent, called *kerosolene*, represented as cheaper and safer than sulphuric ether; it was referred to a committee to be experimented with.

Several interesting observations in the pathology of the lower animals, mainly of calculi and tumours, are to be found in these records. Dr. John Bacon has a valuable paper in the Appendix, upon Siliceous Urinary Calculi, which are extremely rare in the human subject, but not uncommon in the herbivora.

J. H. P.

ART. XIX.—*The Excision of Joints.* By RICHARD M. HODGES, M. D. Boston, 1861. 8vo. pp. 204.

THE monograph before us was successful in obtaining the Boylston Prize of 1861, as the best treatise offered to the Committee, on the subject of excision of the joints. It comes to us, therefore, bearing already a mark of value.

There are few subjects in surgery of equal interest, at the present day, as those

of excision of the joints, and resection of portions of the long bones. Not many years ago it seemed to be the main object of surgeons to invent and practice brilliant methods of operating. At the present time their efforts are plainly directed to the less showy, but more humane undertaking of inventing methods of treatment capable of repairing and preserving diseased and injured parts.

Since the publication of the work of Mr. Syme, printed in 1831, no monograph has appeared in the English language on the subject of Excisions. Since then, a great number of individual cases have been reported, with more or less detail, in which the operation has been performed. Several treatises on the excisions of individual joints have been published, and, what is more, the valuable essays of Wagner, Heyfelder, Esmarch, and other European surgeons, have made their appearance.

In our own country, excisions of the joints have been comparatively little practised, and no one American surgeon has had much personal experience in regard to them. A chapter on Excision of the Bones and Joints, in the System of Surgery, by Dr. Gross, has been, until the appearance of this treatise by Dr. Hodges, the only important contribution on this interesting subject, written by any of our own surgeons.

The contents of the work before us are divided into three parts; excisions in general; excisions of the upper extremity; and excisions of the lower. The first part treats in distinct sections of excisions historically considered, their adaptation to cases; their comparative value in respect to amputations; their adaptation to the two extremities, and their results. In the second part, the excision of each joint of the upper extremity is considered separately, and in sections entitled, history of, excision for injury, excision for disease, operation, and after-treatment, dissections after, and conclusions in regard to; in the third part, the excision of each joint of the lower extremity is considered in the same way. An extensive bibliography and a very complete index are attached to the work.

This treatise gives evidence, in every portion, of well-directed industry and sound judgment. The latter quality is particularly displayed in the various sections containing the *conclusions* in regard to the resections of the respective joints. Every one of these conclusions meets with our hearty approval.

The most original part of the treatise is the extensive statistical tables of the results of excision of the various joints. These tables are exceedingly useful in enabling us to form a judgment as to the safety or danger of excision, as compared to amputation; as to which exposes life to least danger, and which secures the most useful limb.

The disadvantages to be urged against excision are: That it is more dangerous than amputation; that a much longer time is necessary for the cure; that the limb will probably be nothing better than an incumbrance, that it is exceedingly difficult to select the proper cases, and that the operation is a more difficult one than that of amputation.

The first three of these objections can only be decisively settled by statistics, and it is just here that the treatise of Dr. Hodges will be found to have its peculiar value.

As to the other objections to excision, the last mentioned should not influence the surgeon, and the fourth, or the difficulty of selecting the proper cases, is one that the work of Barwell,[1] recently reviewed in this Journal, enables us to solve, with tolerable accuracy, far more completely, at all events, than anything that has ever before been published on this subject.

We must therefore give a hearty welcome to this publication of Dr. Hodges. For reasons just mentioned, it has a particular value of its own, and, together with the admirable work of Barwell, it should be in the hands of every one interested in the proper treatment of diseased joints—cases as difficult to manage as any that fall under the surgeon's care. W. F. A.

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[1] A Treatise on Diseases of the Joints, by Richard Barwell, F. R. C. S. Phil. 1861.

ART. XX.—*On Bandaging, and other Operations of Minor Surgery.* By F. W. SARGENT, M. D., etc. New edition, with an additional chapter on Military Surgery, by W. F. ATLEE, M. D., and one hundred and eighty-seven illustrations. 12mo. pp. 383. Philadelphia: Blanchard & Lea, 1862.

THIS excellent little manual has so long possessed the favour of the medical public, that it needs no commendation at the present time. Of the chapter added by Dr. Atlee, on gunshot wounds and some other points in army surgical practice, we can only say that it is an admirable compendium of the latest and most authoritative opinions in regard to these matters, and will be found valuable as an index of the views of the best modern writers. As a whole, this little work will be found of great use by members of the medical staffs of the army and navy, and especially by such as have lately entered the service.

There is one point upon which we are tempted here to make a remark; namely, the general misuse as we conceive of the phrase "conservative surgery." On p. 372, Dr. Atlee says: "In the recent campaign in Italy, Longmore states that in the lower extremity the practice of conservative surgery was almost entirely abandoned." We hold that surgery wages a war sometimes offensive, sometimes defensive; offensive when a tumour or deformity, for instance, interferes with a patient's comfort or convenience, or renders him unsightly—defensive when the life of the whole body is threatened by a disease or an injury. It is the surgery which, in this latter case, brings the patient off with the least possible loss, which saves the limb if it can be saved, but wisely sacrifices the less for the greater when prudence indicates such a course—to which we would like to see the term "conservative surgery" applied, and we hope that it is in this sense that the phrase will be hereafter used. J. H. P.

ART. XXI.—*Observations upon Puerperal Insanity.* By RICHARD GUNDRY, M. D., Assistant Physician to the Southern Ohio Lunatic Asylum. 8vo. 30 pp. Utica, N. Y., 1860.

THESE observations, which appeared originally in the *American Journal of Insanity*, are chiefly valuable from the well arranged statistics embraced by them in illustration of some of the more important facts connected with the etiology and character of puerperal insanity, as it usually presents itself during gestation, subsequent to parturition, or at a later stage during lactation.

The observations of Dr. Grundy are based, it is true, upon only a limited number of cases of the disease in question. They furnish, nevertheless, a valuable contribution to the general fund of knowledge in respect to a malady, which from its frequency, the class of persons who are its subjects, and the particular circumstances under which it occurs, presents especial claims upon the attention of every practitioner. The comparison of the observations before us with those which have been furnished from other sources is adapted to lead to useful results, and to throw additional light upon some of the characteristic features of a form of disease which has heretofore been studied less closely and diligently than its importance demands.

The observations before us embrace the analysis of fifty-six cases of puerperal insanity.

The first point considered is the age at which the disease first appeared. The table furnished by Dr. G. shows that the number of attacks in the 56 cases was much larger in women between 20 and 35 years than at any other period. Thus 18 cases were in patients between 20 and 25 years of age; 11 cases in those between 25 and 30; 13 cases in those between 30 and 35 years, making a total of 42, or $\frac{3}{4}$ of the entire series of cases. Dr. G. remarks that such a result might have been expected, so far, at least, as relates to the number of puerperal

maniacs of the age of 20 years and from thence to 25 years, inasmuch as the proportion of females of this age in the United States greatly exceeds that of any other age over 20 years. Many of the cases, however, were not first attacks. The age at which the disease was actually developed was as follows: between 20 and 25 years in 9 cases; between 25 and 30 years in 15 cases; between 30 and 35 years in 16 cases; between 35 and 40 years in 11 cases; between 40 and 45 years in 3 cases; and between 45 and 50 years in 2 cases.

The number of attacks suffered by the 56 patients who furnish the observations before us were as follows: by 37, only one attack; by 10, two; by 4, three; by 4, four attacks. In one case the exact number of attacks could not be ascertained. It was only known that she had had several, the first of which occurred before her 25th year, and the last in her 32d year. From all the attacks she entirely recovered. We have then, 85 different attacks of insanity occurring in 55 patients, of which more than one-half (46) occurred in those between 25 and 30 years of age.

The influence of occupation in predisposing to an attack of puerperal insanity was not evinced in the series of cases before us. They do not show that the female whose life is passed in luxurious ease, notwithstanding the supposed tendency of such a life to augment nervous susceptibility, was any more predisposed to the disease than she whose lot was one of poverty—the influence of which is generally considered unfavourable to the development of the nervous temperament.

In respect to the civic condition of the patients, 54 were married, and *two* unmarried.

The question whether a hereditary predisposition to insanity generally produces a tendency to the occurrence of insanity during the puerperal state, is one upon which it was found very difficult to throw any satisfactory light. In the absence of precise information, Dr. G. has included in his estimate the instances in which collateral relatives were known to have exhibited evidence of insanity as leading to the suspicion of a taint in the common ancestors. Thus proceeding, he found 22 out of the series of 56 cases, or *two* in every *five* were suspected or known to have been predisposed to mental disturbance in consequence of hereditary taint.

How far any circumstances of an unusual and disturbing character occurring to the patient about the period of attack are to be viewed as predisposing or exciting causes of the attack of puerperal insanity, it is very difficult to determine. According to Dr. G. such occurrence would appear rather to concur with the existing puerperal condition "in precipitating an attack than in originating it. At any rate they materially increase the difficulties to be surmounted before health is attained by those with proclivities to mental disturbance."

In the 56 cases analyzed by Dr. G. there were in 30 no unusual circumstances detected. Of the remaining 26 cases, *twelve* had been the subjects of more or less intense mental emotion brought on by the loss of a child previous to the last confinement, by grief, family difficulties, the drunkenness or other misconduct of the husband, etc.; *two* of the patients were miserably situated during confinement; *three* gave birth to illegitimate children; and *one* of a still-born child; *three* laboured under inflammation of the uterus; *one* under leucorrhœa; *one* under abscess of mamma; *one* under chorea; *one* under repelled papular eruption; and *one* under repelled ulcer.

In respect to the influence exercised by the character, danger, and complication of the labour in the production of puerperal insanity, we learn from the tables before us that of 53 of the patients (three being unknown) the attack in 10 cases was after a *first* labour; in 3 after a *first, second,* and *third;* in 1 after a *first* and *third;* in 3 after a *first, second, third,* and *fourth;* in 8 after a *second;* in 1 after a *second* and *third;* in 9 after a *third;* in 1 after a *third* and *fourth;* in 6 after a *fourth;* in 3 after a *fifth;* in 1 after a *fifth, sixth, seventh,* and *eighth;* in 7 after a *second* labour; in 1 after every labour; and in 4 after having borne several children. Thus, only 18 or 1 in 2.94 were primiparæ, while of these, 7 had a repetition of the attack at every succeeding confinement, showing that when insanity has once occurred as an incident of the puerperal condition, it has a strong tendency to recur whenever subsequently that condition

returns. In only one case did it slip over one confinement after its first occurrence, and reappear at the next confinement.

The nature of the labour, whether difficult and tedious, or attended with flooding or with eclampsia, would seem, so far as we can judge from the statistics before us, to exert but little, if any influence upon the production of puerperal insanity.

As far as could be ascertained, the period at which the attack of insanity occurred was during pregnancy, in seven cases, within fifteen days subsequent to delivery, in twenty cases, within one month and over fifteen days, in five cases; within the second month, in four cases; within the third month, in two cases; within the fourth month, in six cases; within the sixth month, in four cases; within the second six months, in two cases; immediately after weaning, or about one year after delivery, in two cases; in four other cases the attack took place during lactation, the exact period not ascertained.

The preceding attacks were non-puerperal in four cases; during pregnancy in four cases; immediately, or soon after delivery in fourteen cases; during lactation in two cases, while in six cases the exact period of the attack, which, in all, however, was after delivery, was unknown. So that of seventy-six known puerperal attacks, eleven began during pregnancy; forty-three during the two months following delivery; twenty-two during lactation, or immediately after weaning.

So far as an opportunity was presented for ascertaining the fact, the first symptoms of the attack of puerperal insanity were, in forty-eight cases out of the fifty-six, an excited mode of talking—this was observed in nine cases; delusions—these were observed in seven cases; attempts to wander away, observed in five cases; unfounded jealousy and suspicion, observed in four cases; hallucinations, observed in four cases; suicidal attempts, observed in four cases; fear of injury from some one, observed in three cases; fear of impending evil, observed in three cases; indifference to child, observed in three cases; attempt to destroy child, observed in three cases; ecstatic feeling, observed in one case; suicidal propensity with attempt upon the life of child, observed in one case. In eight cases the character of the first symptoms were not ascertained.

In respect to the form of insanity presented by the fifty-six cases analyzed by Dr. G.; in thirty-seven cases it was that of *mania*. Of these cases, five occurred previously to delivery; twenty-two immediately after, and nine during lactation. In fourteen cases the attack assumed the form of *melancholia*. Of these, two occurred previously to delivery, five soon after, and seven during lactation. The *monomaniacal* form was observed in five cases, all of which occurred either soon after delivery or during lactation.

In *twelve* of the fifty-six cases, as we have seen, the patients were affected with a suicidal impulse. "Allied with this perverted instinct," Dr. G. remarks, "and appearing sometimes in the same individuals, is the propensity or impulse to kill. The victims selected are usually those naturally claiming the love and sympathy of the patient. One patient tried to kill, by scalding, various persons; three patients tried to kill husbands; four patients tried to kill their infants; one tried to kill children and husbands; so that nine, or one in six, developed homicidal propensities. Of these, three were combined with the suicidal impulse.

"The emotions are usually in a state of tension, if such a term be admissible, so that the slightest cause induces a marked response from them. It is difficult to set the data to prove this statement in a clear array, and I, therefore, content myself with a simple assertion of the fact. Grief and anger, &c., appear very readily from the slightest cause.

"From the emotions, whose morbid development underlies so much of insane phenomena, to the senses and intellectual faculties is a natural transition. How far they are involved may be measured to some extent by the hallucinations, illusions and delusions that severally affect them." "More than one-half of the fifty-six cases were more or less under the control of some form of illusion. They heard voices directing them to do this, or to refrain from that. They saw robbers, or deceased relatives, or acquaintances, or faces constantly peering at them from the ceiling or the window. Several entertained that most harassing delusion that they were eternally lost, having committed the unpardonable sin; one

that her husband had bewitched her; and another that she could cure all the sick by laying her hands upon them. In one case, ecstasy 'rapt her soul in Elysium,' but soon the scene changed to the blackness of despair, and a fear of the demons who were tormenting her, taking possession of her."

We cannot command the space to present to our readers an analysis of the history which Dr. G. has presented of the symptoms and progress of puerperal insanity, deduced from the cases observed by him.

The prognosis of the disease is usually stated to be favourable. Of the fifty-six cases analyzed by Dr. G., thirty-one or 55.35 per cent. recovered, four or 7.14 per cent. were improved; six or 10.71 per cent. died, and fifteen or 26.78 per cent. were not improved. The results arranged with reference to the period at which the attack originated, the form the disease assumed, and the duration of the attacks are as follows: Of seven cases occurring during pregnancy, three recovered, one improved, and three were not improved. Of twenty-nine occurring within two months after parturition, fifteen recovered, three improved, three died, and eight remained unimproved. Of the twenty occurring during lactation, thirteen recovered, three died, and four were not improved. Of the thirty-seven labouring under mania, nineteen recovered, three were improved, and four died, eleven, after periods varying from eight months to ten years, remaining unimproved. Of the melancholic and other depressing forms of mental disease, nineteen cases, *twelve* recovered, *one* improved, *two* died, and *four* had received no benefit, during periods of from four to ten years.

Taking the number of preceding attacks into account, we find that there were fifty-seven recoveries, four cases improved, six deaths, and fifteen cases not improved. Which would give a ratio of 69.51 per cent. of recoveries.

With respect to the influence exercised by the previous occurrence in the same individual of attacks of the disease, the data furnished by Dr. G., gives the following proportion of recoveries. In eighty-three known puerperal attacks, there recovered from a first attack thirty-five out of fifty-two, or 67.3 per cent.; from subsequent attacks, twenty-three out of thirty-one; or 74.2 per cent. Thus, it would seem that a first attack is more disastrous to life and reason than a third, fourth, or fifth attack. If we take the non-improved, or those who died, and make the same comparison, we shall arrive at the same result.

As to the influence of time upon the prognosis; we find that within six months, thirteen recovered, and one died; in one year, ten recovered, three died, and two did not improve; in eighteen months, four recovered, and one did not improve; in two years, four recovered, one died, and one did not improve; over two years, four improved, one died, and eleven did not improve.

Of the thirty-one cases of recovery the subsequent history of *eleven* was unknown to Dr. G.; six remained well at the end of two years; two after eighteen months; four after one year; three after six months; two after three months since their last attack. One case, less time having elapsed in it, is omitted. Two cases relapsed, one after a period during which her health was complete, and the other after three months' freedom from any mental disorder. In the first of these cases, the relapse was caused by the brutal treatment of husband, which had also some share, probably, in the production of the first attack. It may be that the relapse in the second case was the result of her family cares being too harassing for her enfeebled mind to resist.

The cause of death is noted in six cases. Two died of *apoplexy*. The attack was sudden in both, in the ordinary course of mania, and without any premonition. One, a case of monomania of fear, died of *fatty degeneration of kidneys*. Several months before death general anasarca was developed, the urine was exceedingly albuminous with abundance of renal casts, increasing gradually in size and clear, waxy appearance, as the disease progressed, and occasionally oil globules. One died of *mania;* one of *no especial disease*, but gradually declined in strength, flesh, and mental energy, and after ten years of mental disquietude and constant suspicion sank into the grave. One died of *pharyngeal abscess*. Her insanity had been of fourteen months' duration.

In respect to the treatment pursued by Dr. G.: in a majority of the cases, anodynes, especially morphia and camphorated tincture of opium, were employed for the relief, in cases of mania and melancholia, of the tired brain from the

fatigue of its own teasing vagaries, and to induce sleep at night. Tonics—some one of the preparations of iron especially, were generally required. The citrate, tartrate or muriated tincture of iron may be used. According to Dr. G. the carbonate combined with conium, with the occasional addition of morphine answers admirably as a general tonic.

To quell the sleepless ravings of some cases a cautious use of chloroform was in a few cases found useful. From the free administration of diffusible stimulants more permanent relief was, however, derived by this class of patients. Wine, spirits, ammonia, sulphuric ether may be employed according to the special exigencies of the case.

The use of cathartics, to relieve costiveness, and of emetics to relieve the stomach from sources of irritation, will be occasionally useful.

In two or three cases—of a low, nervous, melancholy, somewhat hysterical character—with loss of appetite, inability to fix the attention on any object, Dr. G. has found great benefit from the continued use of moderate doses of quinia, with an occasional anodyne.

"In a word, the treatment of puerperal insanity," remarks the author of the interesting paper under review, "is, to brace up the enfeebled body and shattered nerves, to procure as absolute quiet and repose for the organ of the mind, as we gain for a broken bone by the use of splints. To devise the special means by which this end may be attained constitutes the difficulty in both cases. In both, also, there is a point in their history, when passive treatment having done its work, it needs to be replaced by action of the limb or brain, as the case may be. To recognize the exact time when this time is reached, and make judiciously the change of means, should ever be objects of the greatest care. When mental exercise can be safely substituted for mental quiet—now passing into lethargy—excitement of the emotions replace indifference, then they are not only proper, but almost imperative. But, to be too hasty in this matter, is only to renew the former trouble. On the other hand, too long delay allows the patient to sink into partial fatuity."

We cannot be accused of having occupied too large a space in our notice of the paper of Dr. Grundy. It is not always the size of a work that is the test of its value. A long didactic treatise will often fail in the communication of the same amount of positive information which is imparted by the little pamphlet before us, presenting simply the faithful analysis of the leading points presented by the history of fifty-six cases of puerperal insanity. D. F. C.

ART. XXII.—*A Lecture.* By D. HAYES AGNEW, M. D., Surgeon to the Philadelphia Hospital, Lecturer on Anatomy, etc. etc. Published for the Class. 8vo. pp. 59. Philadelphia, 1861.

Eulogy on the late John W. Francis M. D., LL. D., being a Discourse on His Life and Character. By VALENTINE MOTT, M. D., LL. D., etc. etc. Delivered before the New York Academy of Medicine, May 29, 1861. 8vo. pp. 33. New York, 1861.

THE subject of Dr. Agnew's lecture is a sketch of the life and professional labours of Baron Larrey, who, if not the father, was unquestionably the reformer and systematizer of military surgery. Who, as a surgeon, far outstripped all his predecessors in the extent and diversity of his professional attainments; standing prominent among his contemporaries for the soundness of his judgment in all things appertaining to his duties, whether as a simple surgeon, a surgeon-major of hospitals, a surgeon-in-chief, and, finally, inspector general of hospitals. He was equally distinguished for his devotedness to the entire detail of duties which devolved upon him in each of these positions, as for his untiring industry and ever active zeal, under all surrounding circumstances, from the very commencement of the protracted wars which sprang out of the French revolution, throughout the several campaigns, to which these gave rise; whether on the

Rhine, in Italy, in Egypt and Syria—in Boulogne, Ulm, and Austerlitz; in Saxony and Prussia, in Poland, Spain, and Russia, and the final campaign in France and the Netherlands, of 1813. Amid all of which he was constantly busy in providing for the comforts and the safety of the soldiers—the prompt relief and recovery of the sick and wounded, by the introduction of flying ambulances, the organization of hospitals wherever most needed, the establishment of lectureships for the especial instruction of the French military surgeons, and the careful study of the character of the diseases and accidents incident to the life of the soldier, whether in the camp or on the field—whether upon alpine heights, in the damp and cool valley, the arid desert, the wide extended marsh, or the vines and the olive and the fig trees of Southern Europe; amid tropical heats, or the deep and drifting snows and biting frosts of a Russian winter.

Amid all his other employments, Baron Larrey found time to record his observations and to give them to the world, subsequently, in the form of essays and memoirs—thus erecting, with his own hands, the most appropriate monument that could be devised, to commemorate his talents and his labours—the strongest testimonial of his claim to the station of the first and greatest among the military surgeons of all countries and all ages.

The sketch of the life and labours of Baron Larrey given by Dr. Agnew, is one of very great ability, and replete throughout with deep interest. Without being tedious in details, it is, at the same time, sufficiently minute to present to the mind of the reader a very clear portrait of that illustrious surgeon—a truly accurate idea of his career as a surgeon—his intimate association with the movements and achievements of the French army under the republic and the empire, and of the claims which he presents to our consideration and to that of posterity.

The subject of Dr. Agnew's lecture—and one which has been so ably treated by him—was aptly chosen at the present juncture, when our country, forced aside from its peaceful pursuits, has been compelled to assume the panoply of war. Than Barron Larrey, no one can be adduced whose entire career is adapted to furnish a more admirable model for the imitation of those into whose hands are intrusted the health and lives of our citizen soldiers, whether during their sojourn in camp and garrison—when encompassed about with danger amid the fight, and when, after the strife and carnage are over, they are numbered amid the wounded and the maimed.

The learned, witty, polished and earnest Nestor of the medical profession of New York, Dr. John W. Francis, who, after completing the allotted threescore and ten years of man's earthly pilgrimage, was last year gathered to his fathers, has found in his friend, colleague, and contemporary, Dr. Valetine Mott, a truthful and appreciative eulogist.

No one of those whose names are identified with the history of medicine and medical literature in the city of New York, during the present century, stand in more prominent relief than that of Dr. Francis. After a thorough professional education and the diligent improvement of opportunities afforded him by a personal intercourse with the leading physicians and surgeons of London, Edinburgh and Paris, during a visit made by him to Europe, he commenced a successful career as a medical teacher and practitioner, in his native city. Here, amid his absorbing duties as a lecturer, and the occupation of his time by the calls of an extensive circle of patients, he nevertheless found leisure for the preparation of valuable contributions to the literature of his profession, and for intercourse with the wits and literati, the savans, poets, and artists of his day.

Fond of society, of which his brilliant conversational powers, and his varied knowledge, combined with an unostentatious liberality, made him, always, a favourite centre: delighting in all that is calculated to advance and to brighten life, Dr. Francis was equally alive and ever ready to fulfil the sterner duties of life. He was prompt to lend a helping hand in the promotion of every movement for the advancement of science, or the relief of suffering humanity. He was not merely the open advocate and efficient patron of public and professional charities, but his private life was a continual round of unostentatious beneficence; his ear was always open to the cry of distress, and his hand was ever ready to

supply, in secret, the wants of poverty, and to furnish solid relief to the pangs of the suffering.

In the death of Dr. Francis we have lost another of those worthies of the olden school, "whose lives and conversation magnified the physician in the eyes of the people, while their devotedness in the hours of sickness and of danger, endeared their profession to the hearts of the entire community."

D. F. C.

ART. XXIII.—*Transactions of the Epidemiological Society of London.* Vol. I. Part II. 8vo. pp. 127. London, 1862.

THOUGH, taken as a whole, the contents of the present portion of the printed Transactions of the Epidemiological Society may not equal in value and interest those of the portion which preceded, nevertheless, more than one of the articles embraced in it furnish important materials towards an elucidation of the etiology and laws of propagation of epidemic diseases.

From a general report upon the prevailing diseases of the years 1859, 1860, drawn up by Dr. McWilliam, the able Secretary of the society, we select one or two facts of especial interest.

In the summer of 1859 the cholera broke out at Bombay and Poonah, in the East Indies, and almost simultaneously in Europe, where, commencing at Hamburgh, and afterwards extending to the various countries of the Baltic, and later to the coast of Holland, it rested on the Mediterranean sea-board of Spain, and carried devastation amid the Moorish and Spanish troops in Morocco. From the autumn of 1859, up to that of 1860, the cholera appears to have been wide spread and fatal in many parts of India.

Cholera appeared at the Mauritius on the 19th of September, 1859. It continued to prevail within two miles and a half of Port Louis, until the 24th of November. It appeared also in the capital, but the conditions for its propagation not being present, only from twenty to twenty-five cases occurred there. At Grand River, however, which is within the municipality of Port Louis, 149 deaths were recorded. At this place there are two important aggregations of people, in the lunatic asylum, and at Camp Benoit, a large assemblage of badly built and badly ventilated huts inhabited by Indians. The facts connected with various visitations of cholera in this district are especially characteristic of the capricious nature of the disease. In the cholera epidemic of 1854, nearly fifty per cent. of the female inhabitants of the asylum perished, while Camp Benoit, the sanitary condition of which was bad, was the only place that escaped. During the epidemic of 1856, the entire district remained free from the disease, not a single case of diarrhœa, even, having occurred in the asylum. During the epidemic of 1859, again, the entire locality, with both the asylum and Camp Benoit, suffered severely. The immunity of this district at one time, and its invasion at another, could not be accounted for, we are assured, on any change in its sanitary condition.

On the 24th of November, 1859, the cholera disappeared entirely from every part of the Island, but in three weeks subsequently it reappeared and continued to prevail to the end of February, 1860.

From the same report we derive the facts connected with the importation into Lisbon of yellow fever in December, 1859, which are particularly interesting from their bearing upon the question as to the mode of conveyance of that disease to distant places and the measures adapted to prevent such conveyance.

A sailing vessel, the "*Cidade de Belem*," arrived at Lisbon, December 31, 1859, from Para, in Brazil, after a passage of thirty-eight days. Whilst the vessel was at Para, the yellow fever prevailed there, and eight days previous to her departure two of her crew took the disease and died. During the voyage the crew remained in perfect health. Three days after the ship's arrival at Lisbon, the hatches were opened for the purpose of unloading, and the same day all hands, including a pilot and health guard officer, both of whom were sent on board at Lisbon, were attacked with nausea, and other unpleasant symptoms.

The cook soon manifested symptoms of yellow fever, and died on board on the second day of the attack, January. 4th. The health officer was the next attacked, and after being in extreme danger finally recovered; one of the seamen was attacked on the 6th, and another on the 7th. Both of these died at the Lazaretto on the 18th of January.

Every precaution was taken with this vessel on her arrival at Lisbon. Her cargo, consisting of hides and other susceptible articles, was landed at the Lazaretto and burnt. The vessel was towed off the coast on the 14th of January, and ordered to proceed to Vigo, where she arrived on the 22d. After performing a quarantine here of fifteen days, she was admitted to practique and returned to Lisbon, but was there again placed in quarantine, and shipped a cargo for Brazil, under the usual restrictions of that condition.

Here is a ship, leaving a port infected with yellow fever; her crew healthy, and maintaining good health during a long passage, but at the end of forty-one days, the disease which prevailed at the port of departure breaking out on board, attacking the crew, and two persons who came on board at her port of arrival.

The prevailing epidemic throughout Great Britian, during the years 1859 and 60, appears to have been smallpox. During the period referred to, many cases of second attacks of smallpox had been observed, and in many instances those supposed to be protected by vaccination have been attacked. Where the evidences of vaccination were complete, the variolous attack assumed always a modified form, was rarely confluent, and still more rarely fatal; in persons, however, in whom the cicatrices of vaccination were imperfect, a large number of confluent cases occurred, and many deaths.

To arrest, as far as possible, the further extension of the smallpox, the prevalence of which was rapidly on the increase, the Government, in the latter part of 1859, determined to communicate with the local authorities of each parish, warning them of the impending danger, and urging them to secure the protection of the inhabitants by timely vaccination. Notices were, in consequence, issued. The various schools were visited by the medical officers of health or under their direction, and means were taken without delay for protecting all found unvaccinated, as well as those whose vaccination appeared doubtful or insufficient; in some localities a complete system of visitation from house to house being pursued. The immediate result was a very sensible diminution in the smallpox mortality, and to the general and timely vaccination, the report before us unhesitatingly attributes the comparatively slight degree to which certain portions of London have suffered from the severe epidemic of smallpox with which the metropolis and the kingdom generally have been recently visited.

The longest of the papers contained in the present Epidemiological Transactions, are one by Dr. J. Y. Simpson, of Edinburgh, giving "notices of the appearance of syphilis in Scotland in the last years of the fifteenth century," and another by Dr. W. R. E. Smart, being "Observations on the Climatology, Topography, and Diseases of Hong Kong, and the Canton River." Both papers are replete with interest. The first exhibits a good deal of curious research among old books, many of them now but little known. It gives a rather startling exhibit, drawn from the testimony of contemporary writers, of the manners and morals of priest and layman, noble and plebeian, towards the close of the fifteenth century. Dr. Smart's paper on the Climatology, etc., of Hong Kong, is full of valuable facts, nearly all of which may be rendered useful in the elucidation of the etiology of disease, especially the influence of topographical and meteorological conditions upon its production and character.

Dr. Gaven Milroy, in a paper on the influence of contagion on the rise and spread of epidemic disease, has opened, briefly, a subject of the deepest interest whether simply in reference to etiology, or in its bearing upon the question as to the means best adapted for preventing the location and spread of such diseases as usually occur epidemically.

From the facts examined by him, Dr. Milroy, concludes:—

"That the exanthemata are diseases rather of *persons* than of *places*, and that the power and prevalence of their contagion seem to depend more on the diathesis or constitution of the individuals exposed to its influence, than upon the condition of the localities in which they live. The reverse holds true as to

the other febrile diseases (typhus, typhoid, and yellow fevers, etc.) which have been enumerated. Hence it is that they are much more under the control of ordinary sanitary measures than the proper exanthemata, and one or two other kindred distempers, such as whooping cough and diphtheria. Of these, more especially, he thinks it may be alleged, that contagion alone is rarely, if ever, the cause of their epidemicity or tendency to epidemic diffusion, but that epidemicity is always a great promoter of their contagious activity."

An interesting paper is furnished by Dr. B. W. Richardson on Scarlet Fever. It is supplemental to one on the same subject communicated by him to the society, eight years previously.

In reference to the influence of season upon the spread of scarlet fever, the author has examined the effects of temperature; barometric pressure; amount of rain; the rate of movement and electrical condition of the atmosphere; and shows that but few facts of value have been adduced showing the influence of particular atmospherical changes on scarlet fever. It may, however, be worthy of remark, that during a period of eighty-four days, when in one locality there was an equal mortality of sixteen per week, there were fifty-seven days of positive electricity; while in thirty-five days, during which the rate of mortality was forty-one per week, there were thirty-two days in which there was no electrical manifestation. Hence it might be inferred that the absence of electrical manifestations was, at least, coincident with a high mortality, while the presence of positive electricity was coincident with a low mortality. But, on the other hand, when we find a week of extreme high mortality—188—during which there were but two days of positive electricity; and a week of extreme low mortality—8—during which electricity was absent on five days, we can view the facts which would seem to have an affirmative signification, only in the light of coincidences. Still, Dr. R. thinks it possible that, hereafter, some relationship may be traced between the presence of electricity and a low mortality from scarlet fever. It is possible that, while electrical conditions of the atmosphere may not affect the spread of the scarlatinal poison, they may cause modifications in the effects of this on the animal organism.

As to the influence of meteorological conditions of the atmosphere, generally, upon scarlet fever, the statistics in our possession furnish a large amount of negative evidence. Showing that the mortality may be the same under the most opposite conditions of temperature. The most interesting observations are those which show that, if the scarlet fever be due to an aerial poison, it is one limited in its range of action, uninfluenced, at all events, by the mechanical vibration of the atmosphere. In a dead calm, the mortality may be sixteen per week; with a current of air passing over the infected spot at the rate of two hundred and seven miles per day, the mortality may be the same; while, again, with a week of extraordinarily high mortality—188—a current of air may be sweeping over the place at the rate of one thousand and ten miles.

As regards the cause of difference in type of scarlet fever, Dr. R. endeavoured, by excluding its various possible causes, to arrive at the true one. His results in this respect are thus summed up:—

"If we admit—and we are bound to admit as much—that the variety of type of scarlet fever is not dependent upon differences of poison, nor on meteorological condition, locality, physical condition of patient at the time of infection, age, or hereditary taint, where shall we look for an explanation of the singular phenomenon, that of two children attacked at the same time, the one may be comparatively well at the period when the other lies dead? Each event being encircled in the space of a few days. The question is one of the most profound and important in the field of medical inquiry. At this stage of our knowledge we must leave it, with but one supposition, that there is in the organism itself a directing course which modifies the violence of the poison or intensifies its action; a course allied to that agency which prevents in nearly every case a repetition of the disease altogether in those who have passed through its stages, whether gently or severely."

In proof of the connection between scarlet fever and rheumatic fever, Dr. R. adduces facts derived from his own observation, in conjunction with those already on record. Analogy is also instituted as to the relationship of scarlet fever with the epidemic called *Dengue*.

Dr. R. classes scarlet fever as essentially an inflammatory disease; differing thus from Franz Simon, and many more of equal authority who refer it to the same class of affections as typhus and typhoid fevers.

Dr. R. maintains that the poison of scarlet fever is not a gas, nor volatile, but a solid substantive matter, which is thrown off by the lungs or skin, probably with epithelium, and when introduced into the body of the healthy subject, by interfering with the natural zymotic process of the living organism, leads to the formation of an abnormal product—an oxy-acid, which is carried by the systemic blood, and gives rise by its morbific action to all the acute symptoms of the disease. D. F. C.

ART. XXIV.—*Practical Midwifery: comprising an Account of* 13,748 *Deliveries which occurred in the Dublin Lying-in Hospital, during a period of Seven Years, commencing November*, 1847. By EDWARD B. SINCLAIR, A. B. T. C. D., etc. etc., and GEORGE JOHNSTON, M. D. Edin., etc. etc. 8vo. pp. 576. London, 1858.

THE present volume of practical midwifery is, strictly speaking, the record of one of the fullest and most instructive courses of clinical obstetrics with which we are acquainted. It comprises a statistical account of all the deliveries which took place in the Dublin Lying-in Hospital, during a period of seven years, from the 1st of November, 1847, to the 1st of December, 1854, for the greater part of which term the authors, Drs. Sinclair and Johnston, occupied, either separately or conjointly, the position of assistant physicians to the institution.

Besides the general statistics of the hospital, a record, more or less full, is given of each important particular in reference to the leading cases in each of the several classes of labour—with the practice pursued in particular cases, the reason for its adoption, when it differed from that ordinarily followed, and its results.

Numerous tables are given, illustrative of the general facts connected with the condition of the females confined, the nature, character, complications, and duration of the labours, with their results, in reference, as well to the mothers as to the children. Several of these tables are novel in construction, while they are all equally interesting and instructive.

We know not which most to admire—the clear, simple, and unpretending manner in which the entire volume has been got up, or the vast amount of valuable practical instruction on nearly every question connected with bedside obstetrics, with which every chapter of it is replete.

The introductory chapter presents a history of the origin and progress of the Dublin Hospital, up to the year 1858, with a short account of its economy, and general management. From this we learn that, from the opening of the institution, in 1757 to the year 1847, a period of ninety years, 156,100 women were delivered in its wards. These gave birth to 158,535 children, embracing 2,366 cases of twins, 33 of triplets, and one of quadruplets. Of the women delivered 1903 died in childbed. Of the total number of children born, 82,314 were males, and 76,228 females; being an excess of 6,093 males. Of the entire number of children born, 9,291 were dead born, 5,733 died in the hospital, and 143,511 went out alive.

The proportion of still-born children to the entire number of births, was, thus, 1 in every 17¼; while *one* out of every 26 of the live born children died in the hospital. Nearly *one* woman in every 66 delivered had twins, and one in 4,730 had triplets. The mortality, from all causes, of the women delivered, was *one* in 82.

During the seven years, from November, 1847, to the same period in 1854, the number of women delivered in the hospital amounted to 13,748, and these gave birth to 13,933 children, not including 50 abortions, occurring at so early a period as to render it impossible to distinguish the sex. Of the children born, 7,177 were males, and 6,756 were females. The still-born, including those born putrid, amounted to 968.

Of the 13,748 women delivered, 4,535, or *one-third*, were primiparous; 233, or about *one* in 59, had twins, *one* had triplets, and 163, or *one* in every 84½, died in childbed, from all causes—puerperal and other. The number of males exceeded that of the females born by 421. The total number of still-born children, from all causes, was 968, or *one* in about every 14. Of the still-born 487 were putrid at the time of birth, which, deducted from the total number of still-born, leave 481, or nearly *one* in every 28 of the entire births, whose death was either the result of actual labour, or took place immediately prior to its setting in. Upon analyzing these latter we find that 284 were males, and 197 females. Of the 481 cases, 99 of the children were premature, namely, 43 males, and 56 females.

In order to arrive at a correct idea of the mortality of the hospital during the seven years preceding 1854, there should be deducted 17 females admitted in a dying state, leaving a balance of 146 deaths from all causes, or nearly *one* in 94. Deducting from the above 146 fatal cases, those in which death had occurred from visitations of puerperal fever, namely, seventy, the number of those dying from all causes will be reduced to 76, or 1 in every 180⅔. Deducting again such as died from diseases altogether unconnected with the puerperal state—40 in all—there will be left only 36 deaths which originated in labour, or 1 in every 381½ of those delivered. Retaining the 17 cases that were admitted in a dying state, and deducting first, the 70 deaths from puerperal fever, these being considered accidental, 93 deaths attributable to all causes will remain, or 1 in 148¾. Deducting then the 40 deaths which did not result from the effects of labour, there are left 53 deaths directly connected with labour, or 1 in 259⅔ of the entire number delivered.

Referring to the tables which are given, we find that in reference to the numbers delivered the months stand thus: May giving the greatest number; next March; then June, April, July, August, February, November, December, September, October, and last, January. The proportion of primiparæ to the number delivered in each month, we find to have amounted to about one-third. The smallest amount of mortality occurred during the month of May, and the greatest, during the month of December. That in May being in the ratio of 1 to 184⅔ and that in December of 1 to 46½⅝ or nearly one 47th of the women delivered. The month of May, during the seven years, gave the smallest mortality with the greatest number of deliveries, while December gave the fewest deliveries, and the greatest amount of mortality. Taking the series of months during the seven years, in the order of their health, commencing with the most healthy, we find them to run thus: May, June, September, October, August, March, January, November, April, July, February, and December.

The clinical observations recorded in the volume before us are derived exclusively from the 13,748 deliveries which occurred during the seven years preceding 1855. The observations are arranged according as they apply 1st, to natural labour; secondly, to preternatural labour; thirdly, to difficult labour; and fourthly, to anomalous labour. While, in a fifth part, are comprised observations on secondary hemorrhage, induction of premature labour, version, emphysema, fœtal malformations and deformities, ophthalmia neonatorum, puerperal mania, the use of ergot, chloroform, puerperal fever, phlebitis, mortality among children born alive, sloughing of vagina and labiæ, etc.

Notwithstanding the excellence and direct practical bearing of all the observations embraced in the volume before us, it will not be within our power to present anything approaching to a complete analysis of its contents. The best we are able to do is to cull from the different chapters such observations as we believe will be most interesting to our readers.

The admirable account given in the first chapter, of the management throughout of a case of purely natural labour, may be read with profit by all. In respect to the management of the third, or placental stage, the practice pursued in the hospital was, for the practitioner to resume the charge of *the contraction*, which had been under the custody of an assistant, as soon as the division of the cord is effected. The command thus obtained over the uterus was never lost, until the placenta had been either artificially removed, or naturally discharged, which latter usually took place in about fifteen or twenty minutes. The binder was not adjusted until the completion of the third stage, and even not then, until a sufficient time had elapsed to indicate that the uterus was really permanently

contracted. The reasons assigned for this practice are as follows: The woman being always liable to the occurrence of hemorrhage, as long as the placenta remains in the uterus, the hand, retaining its grasp of the fundus of that organ, is constantly apprised of its actual condition, while, at the same time, a sufficient support is given to the abdominal parietes, and when prompt and due contraction does not occur, the necessary stimulation can at once be given, and the collection of clots within the cavity of the uterus prevented. Had the binder been put on immediately subsequent to the second stage, and hemorrhage occurred soon afterwards, time would be lost in unbinding and searching for the uterine tumour, now difficult to find, and when found, almost impossible to command completely, from the intestines having interposed themselves between it and the abdominal parietes. It is also considered a desideratum that the woman shall not be disturbed after the expulsion or removal of the placenta, in order to readjust the binder, as would necessarily be the case when it is previously applied.

The remarks on the management of sore nipples will interest every practitioner. They were a common source of annoyance, in the hospital, both to primiparæ and pluriparæ—more so, however, to the former. They consisted in either fissures or excoriations, and frequently both combined. A nipple wash, composed of borax, chalk, and diluted spirits, was found to be a good application. Combined with cleanliness, and the occasional use of a shield, it appeared to furnish the best remedy for these accidents. Tincture of catechu was found useful in cases of mere excoriation. Gutta-percha collodion, applied so as to form a kind of flexible shield round the areola and base of the nipple, afforded, occasionally, considerable comfort during the process of suction, protecting the part from irritation, lessening the pain, and hastening the healing process. Sometimes, however, it seemed to do more injury than good. The application of weak citrine ointment was attended with but doubtful success. The various astringent ointments and lotions were found so frequently to be productive of no good, that latterly the application of the nipple wash, first mentioned, with a shield, was the general practice adopted. Under all circumstances care should always be taken to dry well the nipple and areola each time after the infant is done sucking, and to prevent the former from remaining in the infant's mouth longer than necessary.

When there was considerable fever upon the setting in of the secretion of milk, with much distension of the breasts, a quick pulse, hot skin, and annoying headache, diaphoresis was encouraged, by means of the ordinary diaphoretic mixture. To the over-distended breast was applied cere-cloth, or a soft linen cloth, spread with a thin layer of treacle, subsequent to the use of the breast-pump, and friction with warm oil. The lochial discharge was carefully attended to, and the condition of the mucous membrane ascertained, as to its freedom or not from inflammation.

The subject of *puerperal convulsions* is treated of in connection with anomalous labour. They are described as apoplectic and hysterical. The former presenting symptoms of cerebral congestion to a greater or less extent, and requiring a depletory treatment. The authors of the present work consider that the term apoplectic is strictly applicable to this form of convulsions. During or subsequent to labour, hysterical convulsions were extremely rare.

The women most frequently affected with convulsions were primiparæ—*fourteen* of the 63 attacked had, however, been previously confined. Of the 63 cases there were but 5 in which the presentation was preternatural, and of these five 3 were in plural births.

When a woman entered the hospital affected with œdema, albuminous urine, headache, dizziness, etc., leading to the expectation of convulsions, labour not having actually commenced, the treatment was, free and repeated purging with hydragogue cathartics, the restriction of the patient to a horizontal position in a cool ward, and her confinement to the mildest and lightest nutriment. In some cases the œdema was so great as to require acupuncturation of the labia majora.

In nearly all the cases which came under notice, anasarca and albuminous urine were present to a greater or less extent. The large intestine was generally loaded. Occasionally, when no suspicion had been entertained of convulsions, a violent paroxysm would occur during labour, when, upon careful examination, almost invariably œdema of the inferior extremities would be dis-

covered. Occasionally convulsions, and of the most violent form, occurred, when neither œdema nor albumen could be detected.

During an attack of convulsions, care was taken to prevent the woman injuring herself. To guard the tongue from laceration, a gag made of the handle of a spoon thickly padded with lint, was placed between the teeth.

As soon as the paroxysm had subsided, blood was taken from the arm very freely, and a purgative given, composed of five grains of calomel and ten of jalap, formed into a bolus, its action upon the bowels being promoted by a strong enema of castor oil, turpentine, and assafœtida—repeated if necessary.

If the attacks continued undiminished in intensity, the head was shaved, cold applied to the scalp, and occasionally, at the same time, flannels wrung out of hot water were wrapped round the lower extremities. Tartar emetic solution, opium and calomel, were also had recourse to. Opium was considered useful after free purging and bleeding. Chloroform was seldom given, and never until after depletion.

When the head of the child was within reach of the forceps, it was at once seized and the infant extracted. When the severity of the case demanded it, the perforator was had recourse to without hesitation.

We copy entire the general summary of the observations made in twenty-six cases of puerperal mania.

"Occasionally mania set in suddenly and quite unexpectedly, but more frequently its approach was gradual, and sometimes insidious.

"It presented itself under two varieties, the one marked by a state of great excitement, with quick pulse and flushed face, the other, and the most frequent form, of a low type.

"In the treatment of these cases restraint was never had recourse to unless absolutely demanded; it was never required save in the first variety of the disease. Careful and constant watching generally sufficed. In no instance was the lancet used after mania had set in, but some cases of convulsions during labour had been bled previous to the attack. With the exception of these, with a case of placenta prævia, and one of accidental hemorrhage, there was no example of extraordinary loss of blood amongst the women affected.

"The line of treatment pursued in the first variety of mania was, to clear the prima viæ thoroughly and at once. To effect this, a brisk emetic was given, which was followed soon afterwards by a purgative enema containing assafœtida, and cold was applied to the head. Did the excitement continue, nausea was kept up till it was lowered, and then a sedative was occasionally given, such as hyoscyamus. In the low form of mania the bowels were cleared out with enemata, mild nourishment was freely given, and the preparations of morphia as freely used.

"Mania occurred in 4 instances in which labour had been accompanied by convulsions, and in 1 where there was albuminuria and œdema, but no convulsive seizure during or subsequent to delivery. Intense mental anxiety may have induced the disease in 4. It happened to 3 women whose labours had been tedious. Cerebral disease gave rise to it in 1 instance, in 1 it occurred after labour complicated by placenta prævia, in 1 after accidental hemorrhage, and 1 woman who had been the victim of seduction, was seized with it. No cause whatever could be assigned for its occurrence in 10 instances. Of the 26 cases of mania, 18 recovered, 5 were removed, and 3 died—1 of low fever, 1 of abscess in the brain, and one of pneumonia. The first and last were pluriparæ.

"The primiparæ amounted to 17, giving birth to 8 boys and 9 girls, of the former, 7 were born alive, and 1 dead. Of the latter, 7 were born alive, and 2 dead. The 9 pluriparæ gave birth to 4 boys, and 5 girls, all save 1 of the latter were alive, and this was putrid.

"Of the 26 women, 22 were delivered by the natural efforts—13 primiparæ, and 9 pluriparæ; the forceps completed the labour of 3, all primiparæ, and 1 was delivered with the perforator and crotchet, also a first case. With only 4 did the labour exceed twenty-four hours.

"The ages of the 17 primiparæ were as follows: 19 years, 2; 21 years, 4; 22 years, 1; 23 years, 1; 24 years, 2; 25 years, 1; 26 years, 1; 27 years, 2; 28 years, 1; 30 years, 1; 34 years, 1. Two-thirds were, thus, under 25 years of age.

"The 17 primiparæ were attacked as follows: 1 on the *second* day; 1 on the

third day; 2 on the *fourth* day; 3 on the *fifth* day; 4 on the *sixth* day; 5 on the *seventh* day; and 1 on the *eighth* day.

"The ages of the 9 pluriparæ were as follows: 25 years, 1; 28 years, 1; 30 years, 1; 32 years, 1; 35 years, 2; 36 years, 1; 45 years, 1; 50 years, 1. And these were attacked as follows: 1 on the *first* day; 2 on the *second* day; 1 on the *fourth* day; 2 on the *fifth* day; and 3 on the *sixth* day."

In respect to puerperal fever, although during the seven years from November, 1847, to November, 1854, not a single year passed without the occurrence of the disease, still it could not be said there prevailed in the hospital any lengthened or severe epidemic of it. During the three years from 1848, to 1850, both inclusive, the number of cases of puerperal fever stands for each year respectively, 43, 29, and 15. Then for the four years, from 1851 to 1854, both inclusive, the cases were, 10, 3, 8, and 11, respectively.

The cases arranged according to the months in which they occurred during the foregoing seven years, stood as follows: January 8; February 12; March 11; April 9; May 2; June 5; July 15; August 20; September 4; October 5; November 17; December 21; making a total of 129. Of these 75 or about 58 per cent. terminated fatally: The deaths arranged according to the months in which they occurred were as follows: January 6; February 8; March 6; April 7; June 2; July 9; August 10; September 2; October 4; November 9; December 12; Total 75.

Few of the cases of puerperal fever occurred after tedious or instrumental labours; on the contrary, the very great majority occurred after cases of purely natural labour.

During the early portion of the seven years referred to, the lancet, we are informed, was employed in the treatment of the disease, but it was soon thrown aside, except in certain cases where there was a full habit, finally, however, the lancet was altogether discarded. Leeches were applied, but by no means so often as might have been expected, nor so freely as was once the rule. In general the fever was of a low form, requiring nourishing food throughout, and very early in the disease, stimulants. Wine, and even brandy in large quantities, were frequently given.

The medicines employed were chiefly mercury, various preparations of opium, ipecacuanha, and turpentine. The last article was used in every form, by the mouth as an enema, and as an epithem, either sprinkled over flannel wrung out of hot water, or upon warm moist spongio-piline.

When the premonitory symptoms of peritonitis occurred after a previous, or during an existing state of constipation, the bowels were at once acted upon by means of a mercurial cathartic followed by a purgative draught, and an enema if necessary. When once the bowels were fully evacuated, it was considered of the utmost importance to keep them quiet.

During the seven years ending with November, 1854, 325 of the children born died in the hospital. The particulars in reference to which are shown by the following table:—

No. of pregnancy.		Sex of child.			Cause of death.										
Primiparæ.	Subsequent.	Male.	Female.	Puny at birth.	Tedious labour.	Deformity.	Overlain.	Convulsions.	Sclerema.	Trismus.	Erysipelas.	Icterus.	Congestion.	Hemorrhage from funis.	Hemorrhage from bowels.
139	186	192	151	228	28	6	24	17	2	18	8	1	7	3	1

Of the above 56 were twin children, born of 40 mothers, of whom 20 were primiparæ. Of these 56 children (8 were premature at the seventh month), 33 were boys, and 23 girls; 47 of the 56 were puny at birth; 4 were overlain; and 5 died of erysipelas. One mother gave birth to 3 of the 325 children; they were

premature. Of the 24 infants reported in the table there is reason to suspect that of some the deaths were not strictly accidental.

Of the 17 who died of convulsions, 9 were males, and 9 were of pluriparous mothers. None of the labours were much protracted, yet the second stage was protracted in some, and the child's head was subjected to considerable compression. The deaths all occurred within 7 days:—viz., 2 on the *first*, 4 on the *second*, 5 on the *third*, 2 on the *fourth*, 2 on the *fifth*, and 2 on the *sixth* day. One of the children who died on the fourth day was a girl, a firstling, born after a labour of thirty-seven hours, with a short but severe second stage. The delivery was perfectly natural. Soon after birth convulsions set in, and recurred at short intervals until death. On examination both parietal bones were found fractured. The fissures commenced at right angles to the sagittal suture, from points about an inch distant from the superior edge of each bone. One fissure extended across the point of ossification of the left parietal.

Only *two* cases of scleroma occurred, both died. One was a boy, whose mother was in abject poverty, and who had been in another hospital for diarrhœa before her confinement. Sclerema was present at birth, and cancrum oris set in on the seventh day; death ensued on the ninth. The other, a girl whose mother was healthy, was also born with the disease, and premature; it died on the third day. The first-mentioned was delivered after a labour of four, and the second after one of five hours' duration. The treatment consisted merely in keeping the surface warm, and giving small doses of wine whey after the bowels had been cleansed.

Eighteen deaths took place from trismus nascentium—10 boys, 8 girls. Three —2 boys, 1 girl—were of primiparous mothers, and 15—8 boys, 7 girls—of pluriparous mothers. All the deaths occurred within ten days, viz.: 2 on the second, 2 on the third, 1 on the fourth, 1 on the fifth, 3 on the sixth, 6 on the seventh, 2 on the eighth, and 1 on the ninth day. In not a single case was the umbilicus found unhealthy. The treatment pursued was nearly the same as in convulsions. Half a grain of calomel and the same quantity of Dover's powder were given every two hours. The hot bath was frequently employed, and the child's strength supported by wine whey. True trismus was invariably fatal.

There was but *one* death from icterus. The patient was born in the 14th pregnancy of the mother. The labour lasted 4 hours: Death occurred on the third day.

Seven deaths were referable to congestion: viz., 5 boys and 2 girls, 3 of them first children including one girl; and 4 subsequent children one of which, also, was a girl. *One* was born after a labour of three hours, 1 after one of five; 1 after one of seven; 1 after one of nine; 1 after one of thirteen; and 2 after labours of eighteen hours.

1st Case. Funis prolapsed—version. Great difficulty experienced in extracting shoulders and head, from oversize of the infant. The labour lasted 18 hours. The child died on the second day.

2d Case. A third pregnancy: face presentation. Though the labour lasted only five hours the face was enormously congested. It was a girl and died on the second day.

3d Case. A second pregnancy: breech presentation: from the large size of the child, a boy, there was considerable difficulty and delay in delivering the head. Labour lasted nine hours; the child died soon after birth.

4th Case. A primipara; delivered on her way to the hospital after a labour of three hours. When admitted the child, a girl, had the head and face much congested, probably from the length of time which elapsed between the birth of the head, and that of the shoulders. It lingered till the seventh day.

5th Case. A primipara and face presentation, like the 3d case, except that labour lasted thirteen hours; the child, a boy, died soon after birth.

6th Case. A seventh pregnancy; breech presentation, a boy. Similar to 3d case.

7th Case. A primipara. The funis, after birth of head, was found coiled twice round the neck of the child, a boy. The delivery was hastened as much as possible, yet after birth respiration was not established, until a drachm or two of blood had been allowed to flow from the funis. The child died in a few hours.

Three deaths occurred from hemorrhage from the funis: one, a boy, was readily delivered by version under the influence of chloroform, the funis having pro-

lapsed. Respiration was with difficulty established. When left it was doing well, but from neglect, it was found, too late, that the ligature had become relaxed, and the child sank from the effects of the consequent hemorrhage. Second and third cases, a boy and a girl, were each born after an easy labour, and death resulted from similar inattention.

We might with great profit extend our notice of the work before us. To indicate, however, all that we find interesting in it, would carry us very far beyond reasonable limits. The volume will be found by all who consult it a rich mine of practical midwifery based upon a large number of careful bedside observations.

D. F. C.

ART. XXV.—*On the Health of Merchant Seamen.* By J. O. M'WILLIAM, M.D., etc. etc., Medical Inspector, Her Majesty's Customs. 8vo. London, 1862.

VIEWED in no other light than one of mere interest, an inquiry into the sanatory condition and vital statistics of the merchant sailors becomes a subject of the deepest concern in every commercial community. A correct and intimate acquaintance with his present position in a sanatory point of view—of the causes, if any, by which his health is impaired and his life shortened, and how far these are inseparable from the circumstances in which he is necessarily placed, or are removable by means within our reach—is essential as the basis for whatever reforms may be required to afford to the merchant seaman every possible protection against the morbid influences to which he is now subjected.

Notwithstanding, within the few past years, much has been effected by legislative enactments and private exertions, towards the moral and social improvement, as well as the protection of the health and lives of seamen, it is to be feared that, in respect to those, more especially, who are engaged in the merchant service, many errors and abuses still continue, the removal of which is necessary before their sanatory condition can be said, in truth, to have attained its proper standard.

In the paper before us—a reprint from the *Transactions of the National Association for the Promotion of Social Science*—Dr. M'William has directed attention to the subject, and has presented such observations in respect to it, as, so far, he has been enabled to collect; with a promise to further prosecute the subject, in the hope of being permitted to place the results before the Public Health department, at some future meeting of the Association.

Since July, 1860, Dr. M'W. has obtained from the office of the Registrar General of Seamen such materials as have enabled him to compile a series of tables showing the actual number of deaths occurring among the seamen employed in merchant ships for the United Kingdom and channel islands, whether engaged in home service or in foreign voyages, during nine consecutive years from 1852 to 1860 both inclusive, with the main causes of the deaths; and the deaths, with their causes, that took place on the home and foreign voyages respectively, for three years, 1856 to 1858, both years inclusive.

From the first of these tables we learn that a yearly average of 734 deaths, or 4.30 in every thousand, was caused by fevers, a yearly average of 272.9 or 1.62 per 1000 by dysentery, a yearly average of 3.72 or .22 per 1000 by scurvy, a yearly average of 1,335.2, or 7.72 per 1000, by drowning and other accidents, and an annual average of 868, or 4.83 by causes not ascertained. Giving for the nine years ending with 1860, a total average of deaths from all causes, each year, of 3,249, or 18.62 per 1000.

The comparative security of health and life enjoyed by the seamen of the Royal Navy and in the merchant service of Great Britian, is shown by a table given by Dr. M'W. exhibiting the ratio of deaths in each, during three years, from 1856 to 1858, both inclusive. The annual average per 1000 of deaths among the seamen of the Royal Navy, was from disease, 18.70; from drowning and other accidents, 4.53; from all causes, 20.25. While the annual average of deaths among the seamen engaged in the merchant service from disease, during the same period, was 10.98 per 1000; from drowning, 8.87; from all causes, 19.85.

Dr. M'W. remarks, it is to be borne in mind, that, "during the period in

question, the number of deaths in the navy was considerably augmented by the loss sustained both by disease and wounds in action among the seamen and marines employed in the operations in China, and the naval force serving on shore during the mutiny in India."

In another table exhibiting the deaths among seamen in the merchant service, engaged in the domestic and foreign trade respectively, and in the Royal Navy on the home station for the three years ending with 1859, it is shown that the average strength per annum of the merchant seamen engaged in foreign voyages was 132,339, while the annual average of deaths was 2,416, or 18.20 per 1000. The annual average of merchant seamen engaged in home voyages was 43,259, giving an annual average of 1,043 deaths, or 24.20 per 1000. The deaths among the seamen of the Royal Navy on the home station was, during a series of years, only from 10 to 11 per 1000.

"The most accurate information is possessed," Dr. M'W. informs us, "as to the amount of deaths that take place among merchant seamen while actually at sea, but that number must not be understood to represent the actual loss of life consequent upon service, on board of merchant ships. Dr. Bryson has observed with reference to the seamen and marines of the Royal Navy, that, 'if it were possible to follow out invalids discharged from the navy into private life, the death rate would be somewhat increased, for it is not to be doubted that a considerable number of those men die of disease contracted in the service, soon after they are discharged from it." In this way a certain number of deaths resulting from service in the navy escape observation, but the amount of loss from disease contracted in the merchant service, of which we have no record, must be far greater.

"In the Royal Navy accurate returns are made of the invalidings, as well as of the deaths, on all stations, whether on board ship or in hospitals. Invalids from the navy abroad are, on their arrival in England, received into the naval hospitals, where, as a general rule, they remain until they are sufficiently well to be discharged, or until they die. In the merchant service, on the other hand, we have no means of tracing the fate of seamen discharged sick, or of those who, from desertion and other causes, leave their ships while abroad. Nor can we arrive at the extent of damaged constitutions and consequent deaths from climatorial and other causes, after the voyage has ended, as the men are then at once discharged. If in good health they soon return to sea, and if sick they fall in with the general population, and help to swell its mortality, while that of the mercantile marine is thereby proportionately diminished.

"The seamen of the Royal Navy and the merchant seamen spring from the same class. The range of age (from fifteen to fifty-five) is nearly similar in the two services, and both are employed in every quarter of the globe, but in many other respects they are very dissimilarly circumstanced. The longest voyages in the mercantile service rarely exceed eighteen months, while men of war are, as a general rule, several, it may be five, years on one station, however unhealthy. In the Royal Navy, where hygiene in this country may be said to have had its birth, there are circumstances favourable to health, as discipline, clothing, cleanliness, good victualling, and, it may be added, breathing space, which, as a general rule, do not exist in the same degree in the other service. The man-of-war sailors have also, in all cases, medical attendance. On the other hand, the merchant seaman, although much exposed in landing and loading cargoes while abroad, and less under control as regards drinking and other excesses than the man-of-war's man, does not, like him, labour under the disadvantages of long continuance in a bad climate, and consequently his constitution gets renovated by comparatively frequent returns to the more healthy latitudes. Making due allowance for the deaths in the merchant service, of which we have no account, I think it may be assumed that the merchant seamen are less obnoxious to diseases originating in climatorial causes than the seamen of the Royal Navy; but, although exempt from the casualties incident to war, they suffer far more from drowning and violence than the seamen of the fleet—a circumstance due in great measure to the comparative rarity of shipwreck in the navy. The proportion of deaths from drowning and accidents in the navy is seldom above 5 per 1000 of the whole force employed, while the normal death rate from such causes in the merchant service seems to oscillate between 8 and 11 per 1000."

When, as is very clearly shown by Dr. M'William, there is taken into account the great addition necessary to be made to the ascertained and recorded deaths in the merchant service, in order to arrive at its true mortality, with the fact that the merchant seamen are much less continuously exposed to climatorial sources of disease, more especially those of the tropics; that they are exempt from the diseases and casualties incident to war; and that, notwithstanding, the records, perfect as regards deaths at sea, but far short of the actual number due to sea service, indicate an actual mortality, from all causes, very nearly equal in the foreign voyages, to that of the Royal Navy, and, in the home service much in excess of it. When these circumstances, we repeat, are taken into consideration, the conclusion appears inevitable that, although much has been done, all is not done that might be done to secure the health and safety of the seamen of the British mercantile marine, who have been appropriately termed "the source and resource of her naval power."

How is it in respect to the health and lives of the merchant seamen of the United States? Have they had thrown around them constantly every sanatory safeguard with which it is in our power to invest them? How is the mortality among them compared with that among the seamen of our navy? Will not some one who has the time and opportunity at his disposal prepare for our information and guidance sanatory statistics in reference to the sailors of this country both on board our national vessels and merchantmen, similar in character to those which Dr. M'William has commenced in respect to those of Great Britain?

D. F. C.

ART. XXVI.—*Anatomy, Descriptive and Surgical.* By HENRY GRAY, F.R.S., etc. The drawings by H. V. Carter, M. D., etc. The dissections jointly by the author and Dr. Carter. Second American, from the revised and enlarged London Edition. With 395 engravings on wood. Large 8vo. pp. 816. Philadelphia: Blanchard & Lea, 1862.

THIS handsome volume of Mr. Gray's must possess some special merit in the eyes of the medical profession, since a second edition of it is so soon called for. It has indeed acquired a degree of favour, which, so far as we know, is unprecedented, in view of the number of well established rivals with which it had to contend. On any other branch of medical science, such as physiology or surgery, the peculiar views, the brilliancy of style, or the accidental position of an author, may gain him acceptance; but a book of descriptive and surgical anatomy must rest its claims on some broader basis. Clearness and accuracy in the text, with an excellent system of illustrations—the great requisites in such a work, are possessed by the treatise before us; and something may be also due to the generous amplitude of its proportions.

The preparing of this second edition was probably almost the last literary labour performed by its lamented author, who died of smallpox in June, 1861, aged thirty-six. Few men have accomplished more for science at so early an age.

The additional matter contained in the present issue has reference mainly to minute anatomy, which was almost wholly passed over in the first edition. The number of engravings is increased by thirty-two, most of the new ones being original and valuable. One of these, showing a transverse section of the wrist, with the posterior annular ligament and the canals for the various tendons, strikes us as belonging to a class of illustrations too little employed. Students and practitioners are too apt to be unacquainted with the different aspects and positions of parts taken collectively; they follow the ordinary routine in their dissections, and omit what after all is the essential matter, the relation of one organ with another. It is this which makes our knowledge of anatomy stereoscopic.

But, as we have already remarked, the standing of this excellent treatise is established, and it needs no further commendation from us. It may, however, be added, that the favour accorded to Mr. Gray's work affords evidence of the correct judgment of those for whom he wrote; while the fact that his American publishers feel warranted in such an enterprise, in times like the present, is surely of good omen.

J. H. P.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Phenomena of Hybridity in the Human Genus.*—Broca has by careful researches been led to the view that the various races of man are different species of the same genus. He exposes as inconclusive the principal arguments adduced in favour of the unity theory, and dwells especially on the incorrectness of the assertion generally made by the defenders of this theory with regard to the phenomena of hybridity in the various races of man, and in various species of animals belonging to the same genus. It has been set forth as the most irrefutable proof of the unity of the human species, that hybrid productions of two different races of man are perfectly able to propagate themselves, while hybrid procreations of two species of animals of the same genus are said to be unable to do so; Broca, however, shows, 1st, that some of the hybrid productions from different races of man, possess only a limited power of propagation; and, secondly, that some hybrid species of animals, as those from the crossing of the dog and the wolf, the goat and the sheep, the dromedary and the camel, the hare and the rabbit, are perfectly able to propagate their species.—*Brown-Séquard's Journ. de Phys.*, vol. iii. 1860.

2. *Progress of Growth According to Age.*—Prof. Quetelet has established from his calculations the following positions as regards the inhabitants of Brussels: 1. The most rapid period of growth commences immediately after birth, the infant increasing about two decimètres in the space of a year. 2. The proportionate increase of growth then diminishes as age increases, until towards the fourth and fifth year, when the child attains its maximum of probable life. Thus, during the second year, the amount of growth is only one-half of that of the first, and during the third year about a third. 3. From the fourth to fifth year, the increase becomes pretty regular until towards the sixteenth year, *i. e.*, until after the period of puberty, the annual increase being about fifty-six millimètres. 4. After the age of puberty the growth continues to increase, though only feebly. Thus, from sixteen to seventeen years it increases four centimètres, and in the two following years two and a-half centimètres. 5. The total growth of man does not seem completely terminated at the age of twenty-five. M. Quetelet also found that the height of the inhabitants of the town exceeded that of the peasantry.—*Med. Times and Gaz.*, Jan. 4, 1862, from *L'Union Méd.*, No. 148.

MATERIA MEDICA AND PHARMACY.

3. *Tannin as a Substitute for Peruvian Bark.*—Dr. Leriche, formerly attached to the dispensaries of the city of Lyons, recently published an interesting

memoir on the antiperiodic virtues of tannin. This essay is well worthy of attention, and has been honoured with a prize by the Society of Medical Sciences of Brussels; the author accounts for the former failures of tannin in the treatment of periodic affections, by the insufficiency and minuteness of the doses prescribed by Dr. Chaussarel. In the experiments instituted in 1840, by this gentleman, tannin was exhibited in gradually increasing doses from ten to forty-five grains in six ounces of fluid, to be taken in tablespoonfuls every three hours during the apyretic interval. Now, M. Leriche considers that this dose is utterly insufficient suddenly to check the paroxysm with any degree of certainty, and cures the fever only when persevered in for a very long time. Hence the treatment becomes quite as expensive as if quinine had been resorted to, and the only advantage of the use of tannin, economy, is sacrificed.

In ague, whatever be the type of the fever, M. Leriche recommends the medicine to be given at the outset in doses of twenty to thirty grains, according to the degree of intensity of the disease, and to be taken three hours before the paroxysm. Two or three doses are usually sufficient to effect a cure, and it may be necessary to exhibit as much as one drachm or a drachm and a quarter at once. If the fever should not yield, fifteen grains only should be given in a mixture to be taken in tablespoonfuls every hour. M. Leriche has never seen this remedy fail in its effects. He has administered tannin in 144 cases, 10 of which were still under treatment when his work was sent to press; 154 patients had been entirely cured, and two of these were men who had recently returned from Algiers with the African fever.

The following are some of M. Leriche's most usual prescriptions: *Mixture.*—Aq. destil. 4 oz.; Aq. flor. aurant. 1 dr.; Acidi tannici, 15 gr. ad 1½ dr.; Syrupi, 1 oz. F. s. a.

To be taken in tablespoonfuls hourly, or in two doses a couple of hours before the paroxysm.

Powders.—Acidi tannici, 1 dr.; *Divide in chartulas* 8. Each powder to be taken in a wafer, in jelly, or dissolved in half a glass of sugar and water.

Syrup.—Syrupi, 16 oz.; Aq. flor. aurant. 2 oz.; Acidi tannici, 2 dr. F. s. a. Every ounce of this syrup contains about eight grains of tannin.

Enema.—Decocti hordei, 6 oz.; Acidi tannici, ½ dr.; Vin. opii, 8 min. F. s. a. The addition of laudanum increases the chances of this enema being longer retained.—*Dublin Med. Press*, Jan. 22, 1862, from *Journ. de Méd.*

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4. *Anarcotine.*—In the *Indian Annals of Medicine*, for Sept. 1861, there is an elaborate and able report addressed by Dr. A. Garden, of Ghazeepore, to the Deputy Inspector-General of Hospitals, on the therapeutic uses of anarcotine, tabulating in various forms the results of its employment in nearly 700 cases of intermittent fevers. Turning to our systems and dispensatories, we find it briefly noticed that this substance has been employed as an antiperiodic by Dr. Roots and Dr. O'Shaughnessy. This brief notice has, it appears, been wholly overlooked or neglected in this country; and yet, as we shall show, anarcotine possesses therapeutic properties well worthy of attention.

It is generally known, that one of the crystalline constituents of opium received from chemists the name of "narcotine," under an erroneous impression that it was the narcotic principle of that drug. So far from this being the case, it has not the slightest claim to that title; and, consequently, it is very properly proposed to prefix the privative letter *a* to the name, and henceforth designate it as *anarcotine.*

Referring to Sir W. O'Shaughnessy's original statement, we find him saying:—

"I have now employed the narcotine in sixteen cases of remittent fever, and such is my opinion of the efficacy of the remedy, that in instances of fever, intermittent and remittent, in ordinary healthy subjects, and in whom there is no complication of severe organic disease, I give it with the full expectation of arresting the next periodic return of the fever. I have seen the result follow in ten of the cases of the fever alluded to. I consider narcotine a more powerful antiperiodic than quinine. The remedy does not act silently. I have observed a degree of general heat follow its use in the first instance, and subse-

quently perspiration, so that it appears to excite in the system a salutary and powerful counteraction, as to stop the morbid concentration that issues in fever. I have not observed narcotine to lead to organic disturbance in the cases in which I have used it. In short, even from my scanty experience, I consider the remedy an invaluable one."

To his own testimony Sir William added the experience of several practitioners, who speak in the highest terms of its value as an antiperiodic, especially applicable—1st, in quotidian fevers; 2d, in cases complicated with visceral enlargements of the liver, spleen, &c.—or local inflammations, as of the bowels—or cerebral congestion; 3d, in cases of intermittents supervening upon surgical operations; 4th, after failure of quinine, or both quinine and arsenic.

Anarcotine is a white, inodorous substance, crystallizing in prisms, insipid to the taste, insoluble in cold and sparingly soluble in boiling water, more soluble in alcohol and ether, insoluble in alkaline solutions. It forms salts with the mineral acids which have a very bitter taste, similar to that of quinine. The sulphate and hydrochlorate are the most convenient for internal use. Anarcotine is obtained from the residue of opium left after separation of the morphia. Hence it ought to be a very economical medicine.

Dr. Garden's investigations, as recorded in the report alluded to, were directed to the therapeutic value and peculiarities and the commercial advantages of the use of anarcotine, and the conclusions he establishes are as follows:—

We have in anarcotine a remedy which fails in only 3.6 per cent. of all cases treated by it alone; and, without regard to the previous duration of the disease, and taking both quotidian and tertian agues, it arrests the fever on the whole average before the recurrence of a third paroxysm after the commencement of the remedy.

In small doses anarcotine acts as a tonic, increasing appetite and improving the tone of the system generally. For this purpose, from half a grain to a grain of the sulphate, combined with a slight excess of sulphuric acid, is a sufficient dose.

As an antiperiodic, a grain and a half to three grains or more, even to the extent of six grains, may be given at suitable intervals. Its most appreciable effect on the system is, that it increases the heart's action, raising the pulsations from ten to twenty beats per minute beyond the ordinary amount, and renders the pulse somewhat fuller.

In larger doses (five to fifteen grains) it produces increased heat of surface and diaphoresis, and sometimes disagreeable symptoms—nausea, giddiness, and vomiting. These, however, disappear on lessening the dose, in most cases. The author remarks, "In several cases I have obtained marked benefit by combining tincture of opium with the sulphate of anarcotine." "The only objection to the medicine is its tendency to produce constipation;" hence, before and during its administration, purges are necessary.

In reference to the relative economy of anarcotine and quinine, Dr. Garden's tables are full and conclusive. The average quantity of sulphate of anarcotine required to arrest intermittent fevers was found to be twenty grains for quotidians, and something less than forty grains for tertians; whilst about sixteen grains were demanded during convalescence from both kinds for the re-establishment of health. If it fails in a small percentage of cases, this is not more than is experienced with quinine, to which it is nearly if not quite equal in therapeutic value as an antiperiodic.

As a matter of mere scientific curiosity, not of any present significance in therapeutics, we may add that organic chemistry separates anarcotine into four homologous bodies, which, by decomposition with caustic potash, yield homologous volatile bases:—

Normal anarcotine—yielding ammonia.			
Methylic	"	"	methylamin.
Ethylic	"	"	ethylamin.
Propylic	"	"	propylamin.

—*Lancet*, Jan. 11, 1862.

5. *Therapeutical Effects of Colchicum Autumnale in Rheumatism and Gout.*—The late Dr. GOUPIL, of Rennes, has left a posthumous work, in which he explains the experimental results which he obtained as to the action of colchicum, in a series of observations made upon his patients and upon himself. It has been generally believed that the efficacy of colchicum depends upon its purgative action, because the alvine evacuations often coincide with the disappearance of pain; but Dr. Goupil thinks that this view is founded upon a serious and dangerous error. He shows that when colchicum is taken in very minute doses, it sometimes happens that the pains cease without any evacuations having occurred; and as to the effect of purgatives administered in combination with colchicum, they tend to diminish its action rather than to increase it. He therefore advises the employment of colchicum alone, instead of the usual compound formulæ. He considers that the real action of colchicum is that at first it irritates slightly the digestive passages, and afterwards produces symptoms which may be referred to the nervous system; it is then absorbed, circulates with the blood in all parts of the body, and on its return, or secondarily, it increases the intestinal, the urinary, and even the cutaneous secretion. If the drug has been taken in small and repeated doses, it may happen that the gout ceases without any evacuation by the bowels, but after a more or less abundant evacuation of urine or perspiration. As for the bad effects which are attributed to colchicum, such as metastasis of the disease, intestinal ulcerations, and death, Dr. Goupil thinks that some of the consequences are due to the medicines with which colchicum is often associated, and that when the drug is used carefully, and not given for too long a time, no unpleasant results are to be feared.—*B. and F. Med.-Chir. Rev.*, Jan. 1862, from *Archives Gén. de Méd.*, July, 1861.

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6. *Therapeutic Employment of Olibanum.*—Dr. DELIOUX, of Toulon, thinks that olibanum has fallen into unmerited disuse, and that its employment would render great service to medicine. It belongs to the class of balsamic drugs, the most interesting therapeutical properties of which are that they modify certain pathological conditions of the mucous membranes, and that they moderate or dry up the vitiated secretions which those surfaces often pour out. The well-known effects produced by the balsams of Tolu and Peru, benzoin and tar, induced Dr. Delioux to inquire whether similar results might not follow the use of olibanum. He ascertained that the latter substance was equally efficacious with the other balsamic medicines, but that it was more applicable to hospital practice than the Tolu and Peru balsams, by its greater cheapness, and superior to tar by its being more agreeable to the stomach. He employs olibanum in the form of pills containing one gramme (about fifteen grains) as a medium dose, but it may be raised to four or even to eight grammes. He has also prescribed it as an emulsion, but this form has a pungent and aromatic taste which is displeasing to some palates. In the form of vapour, it has produced favourable results as a fumigating agent; sometimes incorporated as a powder with other substances, such as belladonna or stramonium, in cigarettes; sometimes thrown on an ignited body, in order that the odorous fumes may be inhaled by the patients. These fumigations were found serviceable in cases of bronchitis and chronic laryngitis, modifying or suppressing morbid secretions, and alleviating cough and pain.—*Bull. Gén. de Thérap.*, Feb. 28, 1861.

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7. *Podophyllin as a Cholagogue.*—Dr. RAMSKILL has tried this remedy largely. He says that it is the most powerful cholagogue known, and is infinitely superior to any in the Pharmacopœia, more active and more certain. Granted there be any healthy liver structure remaining, it is certain to produce copious excretion of bile. It is a cathartic as well as a cholagogue, but its latter effect frequently precedes the former, as proved by occasional regurgitation into the stomach and vomiting of bile before its cathartic action has commenced. First, as to its mode of administration, he has, he states, never given more than half grain doses, and after numberless combinations, he finds the following most efficacious and kindliest in action. For quick and aperient action, half a grain of podophyllin combined with an equal quantity of extract of Indian hemp, repeated every six or eight hours. Occasionally this dose

causes griping. A combination he more frequently uses consists of one-quarter of a grain of each with two or three grains of dried carbonate of soda. The podophyllin saponifies with an alkali, and is rendered very much more mild in its action. To give illustrative cases—where the arrested secretion of bile, or congested or sluggish liver, is a drawback to the progress of cure. In chronic dysentery, phthisis, cardiac disease, as well as in liver diseases proper, its good effects are equally manifest. Given with sedatives in small doses, it acts not only on the liver, but on the salivary glands, producing, like mercury, a copious flow of saliva, though unattended with the characteristic mercurial affection of the gums.—*Med. Times and Gaz.*, Jan. 4, 1862.

8. *Iodide of Potassium.*—This salt is one of the remedies which has of late steadily increased in general favour. This may, perhaps, to some extent be explained by the fact to which we have frequently adverted, that recent researches have proved many hitherto obscure affections to be really due to remote syphilitic taint. Although very valuable in some forms of rheumatism, and in procuring the absorption of inflammatory products generally, yet it is against the tertiary forms of syphilis that this salt best shows its specific power. Of late years the customary dose has much increased, and eight to ten grains is now with many of our Hospital Surgeons an ordinary prescription. Considering the enormous quantities which are prescribed both in Hospital and private practice and the rarity of any observable ill effects, it is quite clear that for the most part it exerts no evil influence. Wasting of the breasts and testes, the bugbears of former times, are now never heard of, and anything like iodism is certainly exceptional. The addition of ammonia to all mixtures containing the iodide of potassium is now a very common practice. We mentioned it some years ago as having been strongly recommended, amongst others, by Dr. Gull at Guy's and by Mr. Paget at St. Bartholomew's. Mr. Paget used to remark that he considered five grains of the iodide with half a drachm of sal volatile equal to ten grains of the iodide alone. With some Surgeons, and especially in the treatment of syphilitic diseases of the nerves or brain, the addition of tincture of nux vomica is frequently made.—*Med. Times and Gaz.*, Jan. 4, 1862.

9. *New Method of Administering Chloroform.*—Professor Simpson stated to the Edinburgh Obstetric Society (Nov. 14, 1862), that for some time past he had used chloroform in a manner somewhat different from that in which he was formerly in the habit of administering, and recommending it to be administered; and he believed that by the new method the patient was more rapidly anæsthetized, and at the same time a great saving was effected in the quantity of the drug employed. The difference in the two modes of administration consisted in this, that according to the old plan the fluid was poured upon a cloth folded into several layers, and the hand of the administrator had to be kept between the cloth and the patient's face, in order to insure the due access and admixture of air; while, in following out the new method, *one* single layer of a towel or handkerchief was laid over the patient's nose and mouth, taking care not to cover the eyes, and on this single fold the chloroform was poured, drop by drop, until complete anæsthesia was induced. There was little or none of the drug lost by evaporation when it was administered in this manner, for the patient inhaled it at the moment when it was poured on the cloth, and inhaled it mixed with a sufficient quantity of air, which was easily inspired through a single layer of any ordinary napkin. Dr. Moir had been long in the habit of administering chloroform in this way upon a handkerchief thrown over the patient's face. He (Professor Simpson) believed it would add to the safety with which the drug might be employed, to administer it in the manner he had described. He had often feared lest the lives of patients should be sacrificed by the careless manner in which, in particular, students and young practitioners sometimes applied the damp folded cloth over the patient's face, without admitting a sufficient supply of air; and he had no doubt that many of the deaths attributed to chloroform were due only to the improper administration of it, and were, consequently, no more chargeable on the drug itself, than were the many deaths resulting from accidental overdoses of opium, etc. But the dangers from care-

less and improper administration would be diminished if there were never placed over the patient's nose and mouth more than one single layer of cloth, moistened with a few drops of the fluid. The first patient to whom he had administered it in this manner had been chloroformed several times previously, and had never gone to sleep till an ounce and a half or two ounces of the fluid had been employed; but when administered drop by drop on a single layer of a thin towel, one drachm had sufficed to induce the most profound sleep. It had thus all the advantages that had ever been claimed for the complicated apparatus which some medical men were still in the habit of using. There was only one precaution to be attended to in employing chloroform in this manner, viz., care should be taken to anoint the lips and nose of the patient beforehand with oil or ointment, to prevent the skin from being injured by the contact of the fluid that resulted from the close application of the wetted towel to the patient's face.

Dr. Peter Young stated that he had recently administered chloroform in the manner described by Professor Simpson, to a patient in labour, and that he had kept her asleep for ten hours with only two and a half ounces of the drug.—*Edin. Med. Journ.*, Dec. 1861.

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10. *Mode of Administering Cod-Liver Oil.*—Many persons are unable to keep down cod-liver oil, returning it several hours after taking it, even when they have taken it at the beginning of a meal, and strange enough, only vomiting it after the digestion of the aliments has terminated. M. DANNECY having been consulted by many inconvenienced in this manner, and who yet swallowed the oil without any repugnance, recommended them to take after each dose from eight to ten grains of calcined magnesia suspended in a small quantity of water. The success of the plan was most complete.—*Med. Times and Gaz.*, Feb. 1, 1862, from *Union Médicale*, No. 153.

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11. *Clinical Experiments on some of the Extracts most commonly employed in Medicine.*—M. HIRTZ instituted a number of clinical experiments in order to determine the relative value of certain extracts obtained from different parts of the same plants. The extracts employed were those of aconite, belladonna, conium, digitalis, hyoscyamus, and stramonium; and the motive for making the experiments was the uncertainty which prevails as to the efficacy of a given extract, the difference in operation being due to the varying conditions in which the respective plants, or parts of plants, are employed. Thus the extract of aconite made from the leaves is without any therapeutical value; the stem of the digitalis is generally far inferior in efficacy to the leaves of the same plant; the extract from the leaves of hemlock is feeble in its operation, as conia (the alkaloid) exists only in small quantity in the green parts of the plant; and the extract of henbane made from the leaves is easily altered in its qualities and rendered inert.

Aconite.—The cultivated aconite does not contain any active principle, and in the wild plant this principle is almost entirely concentrated in the root, the powder of which is so acrid as to be almost insupportable to the eyes. M. Hirtz administered to patients in the hospital the extract of the leaves in doses of from half a gramme to a gramme (seven grains and a half to fifteen grains), generally without producing any physiological result; but the effect of the extract of the root was entirely different. A pill containing five centigrammes (a centigramme is .1543 of a grain) was given to a patient with asthma and emphysema, and half an hour afterwards he was seized with vertigo, partial blindness, dilatation of the pupil, extreme paleness, lipothymia, and fluttering pulse. In consequence of these dangerous symptoms, the extract was given to other patients only in the dose of one centigramme. Therapeutically it was found that cough, and particularly hooping-cough, was allayed by this extract, which appears to be superior in its action to belladonna.

Hyoscyamus.—While the active principle of aconite undoubtedly exists in the root, that of hyoscyamus certainly resides in the seeds, and, in fact, chemical analysis proves that *hyoscyamia* is found in greatest quantity in the latter parts. The extract of the leaves was given to patients in the dose of fifty to

seventy-five centigrammes a day, and the physiological effects were those usually described, as dilatation of the pupil and dryness of the throat; but these results were not only slightly marked, but they were rather inconstant, and even a gramme was sometimes given without their being observed. With the extract of the seeds, however, the phenomena were much better marked and more constant, and although only a centigramme was given at a dose, there were dryness of the throat, dilatation of the pupil, more or less complete blindness, paleness, and cold sweats. Therapeutically, the extract of the seeds was efficacious in phthisical coughs, and more efficacious than aconite in asthmatic attacks.

Belladonna.—While the active principle of aconite resides in the root, and that of henbane in the seeds, the active principle of belladonna occupies both those parts, and it is known besides that the berries of this plant are violently poisonous. It results, however, from analysis as well as clinical observation, that the extract or powder of the root is more active than that obtained from the other parts. In a therapeutical point of view, it was found that the prolonged use of the extract of the root of belladonna diminished the violence of some asthmatic attacks, and warded off the paroxysms in a considerable degree; the same remedy appeared efficacious in some cases of obstinate constipation in women, two centigrammes given in the evening being followed by an evacuation the next day; and in hysterical trismus the same remedy induced relaxation of the jaws in two cases after being employed for a few days.

Datura Stramonium.—The active principle of this plant resides chiefly in the seeds. The researches of M. Hirtz prove that there exists a great pharmaco-dynamic and therapeutical similarity between datura stramonium and belladonna. The therapeutical effect of stramonium in asthma was most remarkable when used in the form of segars; but when employed internally in the same disease it was no less efficacious, although less rapid in its action.

Digitalis.—The active principles of this plant reside chiefly in the leaves, and these are the parts employed for medicinal purposes. The observations of M. Hirtz confirm the views of other writers on the peculiar powers of this drug.—*Bull. Gén. de Thérap.*, Feb. 18, 1861.

12. *Solidified Creasote.*—The great fluidity of creasote frequently occasions much inconvenience when it is applied for caries of the teeth, and M. Stanislas Martin, to obviate this, recommends the combination of fifteen parts, by weight, of the creasote, with ten of collodion. A gelatinous consistency is thus obtained, and this preparation has the advantage over simple creasote in forming a varnish which closes any orifices in the carious teeth against the access of air. "Creasote coagulates albumen, to which property is probably due its astringent and hæmostatic action. We believe that this new form of administration will allow of surgeons employing this body whenever they are in want of a stimulant agent combined with an isolating substance."—*Med. Times and Gaz.*, Jan. 4, 1862, from *Bull. de Thérap.*, vol. lxi. No. 11.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

13. *Diphtheria.*—The following views in regard to this widely prevailing disease, recently published by M. Trousseau in his *Clinique Médicale de l'Hôtel-Dieu* (Paris, 1861), cannot fail to interest our readers.

"Diphtheria is *par excellence* a specific malady, contagious in its nature, manifesting itself both on the mucous membranes and on the skin, presenting the same characters in either locality. Diphtheria has, in truth, this in common with certain specific and contagious maladies, as the eruptive fevers and syphilis, but with this difference nevertheless, that it only affects the external integument on the condition that it be denuded of its epidermal covering." (p. 212.)

The most common form of the disease is that which specially favours the

pharynx and the air-passages. Known to and described by authors of past ages, it has served as the type for the *Treatise on Diphthérite* of M. Bretonneau.

The disease shows itself occasionally in the malignant form, destroying life by general blood-poisoning, after the manner of septic and pestilential maladies.

Pharyngeal or Simple Diphtheria is met with in all climates, at all seasons; sparing no period of life, it yet most frequently attacks young subjects. M. Trousseau gives this description.

"Commencing by a redness of the pharynx more or less well marked, by swelling of the tonsils, more frequently of one only, a whitish circumscribed patch soon shows itself, formed at first by a layer resembling coagulated mucus, half-transparent, which thickens itself, widens, and very rapidly takes on a membraniform consistence. This exudation in the first moments of its formation is readily detached from the mucous membrane, to which it only adheres by fine prolongations which penetrate into the muciparous follicles." (p. 315.)

The mucous membrane beneath the deposit is noted as usually sound, hardly presenting other alteration than slightly increased vascularity; ulceration of this structure is exceptional. After some hours, the pseudo-membrane begins to increase, the tinge deepening to a yellowish-white; it just covers one tonsil; then the uvula shares in the deposition; and later, the other tonsil with the posterior wall of the pharynx becomes involved.

The lymphatic glands at the angle of the jaw are swollen from the commencement, and are, therefore, valuable as aids to the diagnosis. Fever, at first sufficiently marked, soon subsides. The fetid odour from the mouth, and the grayish tint of the exudation, have led observers to the opinion that gangrene was present—hence various appellations expressing this belief. The professor in his wide experience has met with but three instances where actual gangrene existed.

The development of croup from exclusion of the disease to the larynx forms the most common ending of this form of the affection, as well in sporadic as in epidemic cases. M. Trousseau expresses a decided opinion that, in far the majority of cases of croup, the malady will be found on close inquiry and examination to have originated in the pharynx. It is specially mentioned, and the fact has, perhaps, met with too little attention when different plans of treatment have been compared, that "the difficulty of respiration is intermittent." This is a positive character of the affection—a part of its natural history, occurring whether the disease has been subjected to treatment or simply left to itself.

Malignant Diphtheria.—In this form of the disease exudation-patches appear on one or other tonsil, differing usually in no respect from the false membrane of ordinary pharyngeal diphtheria; sometimes they may present special characters, may exhibit a yellowish or reddish tinge, while the tissues beneath are often œdematous and of a livid red colour.

There is early and often even excessive swelling of the glands about the jaw; this forms one of the most serious indications of the malignant character of the disease. Erysipelatous redness of the skin over the swollen part is not unfrequently met with, giving the impression sometimes even that there must be deep-seated abscess.

There may be extension of the disease to the nares; and when this is the case, the result is almost always fatal.

M. Trousseau insists strongly on the blood-poisoning of this variety. Life is destroyed, not by any local manifestations, but by the effect on the system as a whole. The disease acts as a septic poison. In proof of these tendencies are noted the alteration in the physical characters of the circulating fluid, the extreme proneness to hemorrhages, waxy pallor of the skin (by no means, however, dependent on mere loss of blood), and the ultimate termination of the scene by syncope.

A section is devoted to the different situations which may be occupied by the false membrane; and the caution is strongly given by the author, that under no circumstances should the external cuticle be destroyed or removed. If this be done, a fresh nidus is at once afforded to the disease.

Whether, however, the simple or the malignant form be present, the essentials of the disease are the same; the one may generate the other, and the most simple case may give rise to another of the most malignant type.

M. Trousseau has no doubt whatever as to the contagious character of the affection.

A sketch of the paralysis consequent on diphtheria is then given. The paralytic condition may be *severe* or *mild*.

To trace the course of the latter form: the palate curtain is usually the first structure where the loss of muscular power is evident; coming on without warning during convalescence, the velum palati hangs pendent; direct excitation has no effect, nor is any movement induced by depressing the tongue, etc. When the limbs are affected, the sensibility is first interfered with; tingling and formication are the earliest symptoms; subsequently the motor power is found to be more or less at fault. The special senses are occasionally affected.

It would seem that the explanation must so far be found in the disturbance of the nervous system as a whole, consequent on the poisoning of the blood; the condition, therefore, parallel to what is sometimes seen after fevers, etc.

Treatment.—Although there be actual inflammation of the tissues involved, yet neither can the antiphlogistic treatment nor any of its modifications be employed with advantage. If such methods are resorted to, the only effect will be still more to reduce the already debilitated patient.

"Topical medication, despite the opposition with which it daily meets, is *par excellence* the treatment of diphtheria." (p. 404.)

Astringents and caustics have been resorted to from the earliest appearance of the disease.

Alum and tannin are of great value, blown on the throat in powder, or employed in solution. The more ordinary caustics, especially hydrochloric acid, are of essential benefit, applied early in the disease and with sufficient freedom. Should there be indications of commencing laryngeal affection, the local application of solutions of nitrate of silver to the upper part of the larynx, and to its interior even, may be employed.

The *general* treatment must be tonic and reparative. The administration of food will occupy the first place; frequent and liberal supplies. The forms of medicine of most value are quinine and preparations of iron, especially the perchloride and the syrup of the citrate or the tartrate.

Should extension of the disease to the air-passages take place in spite of whatever remedies may have been employed, there yet remains one important resource —*tracheotomy*.

On this point the testimony of M. Trousseau is of essential value. He has performed the operation (p. 414) more than two hundred times with success in more than one-fourth of the whole number of cases.

The operation is described at some length; the necessity of extreme slowness in the various steps is pointed out, and in every stage of the procedure there is a reference to some useful expedient.—*Brit. Med. Journal*, Jan. 11, 1862.

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14. *Diphtheritic Paralysis.*—M. Roger states that during the year 1860 there occurred 210 cases of diphtheria at the Hôpital des Enfants, and paralytic symptoms followed in 31 cases. The proportion was really greater, inasmuch as several of the children were removed from the Hospital prior to the period at which consecutive paralysis is usually developed, while others died before the period has arrived. M. Roger believes that the proportion of these cases is really a fourth or a third. These secondary paralyses are as rare in the other acute diseases of children as they are common in diphtheria. Thus, in 1860, among 61 cases of angina simplex, 12 of typhoid fever, 33 of rubeola, 12 of scarlatina, 4 of variola, and 24 of pneumonia, not an instance of secondary paralysis occurred; and the same negative results were observed in M. Blache's wards. Of 40 cases of diphtheritic paralysis which have come under M. Roger's notice, the most frequent ages at which they appeared were from 4 to 6, there being 21 female to 17 male infants. In almost all cases the paralysis has commenced by the pharynx and velum palati, as exhibited by the nasal twang and dysphagia. The establishment of a relationship between its occurrence and the gravity of the primary disease is not easy, although it would seem to be a proof of a greater amount of blood-poisoning. But, in fact, it is in the milder cases that these paralyses are found of most frequent occurrence; but this may be owing to the

rapidity with which death usually occurs in diphtheria. As to the relationship of the paralysis to albuminuria, often met with in diphtheria, M. Roger has not sufficiently examined the point, beyond being able to state that albuminuria is at all events not an essential concomitant. The usual period of the appearance of the paralysis is from the fourth to the eighth day, but sometimes dysphagia is observed from the beginning, while at others these secondary symptoms occur much later. Their mean duration is about a month. As a general rule the prognosis is not unfavourable, although in exceptional cases death has resulted from paralysis of the respiratory muscles, or sudden suffocation. For treatment, M. Roger recommends especially tonics, iron, sulphurous preparations, and the application of electricity.—*Med. Times and Gaz.*, Jan. 4, 1862.

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15. *Guaiacum in the Treatment of Diphtheria.*—Dr. J. W. WALKER, of Spilsby, extols the efficacy of guaiacum in the treatment of diphtheria. He calls attention to the three following salient characteristics of the disorder, each of which he says possesses a decided therapeutic indication, namely: "1. A more or less acute unhealthy form of inflammation affecting the faucial region, and which, if considered singly, would lead us to associate the complaint with common cynanche tonsillaris. 2. The presence of the peculiar leathery exudation which again associates the disorder with canker, stomatitis, and other allied affections. 3. The great, often suddenly induced, debility and tendency to death by exhaustion, indicate the typhoid character of the complaint.

"For each of these several characteristics, our materia medica possesses a remedy of almost specific virtue.

"I have long looked upon guaiacum as a specific in common sore throat; for, no matter in what place, what the age, sex, or condition of the patient, or what the stage of the complaint, I have always administered it, and had reason to be satisfied with the result; indeed, I consider the effect of this remedy in such cases to furnish an example of cure as distinguished from treatment. (*Vide* Dr. Latham's lectures.) Frequently have I seen cases of cynanche and diphtheria existing at the same time and in the same family, and I was first induced to give guaiacum in the more severe affection by observing its good effects in cases which, at the onset, were supposed to be examples of common sore throat. I now unhesitatingly consider guaiacum as the remedy *par excellence* for diphtheria. The presence of the peculiar exudation almost instinctively suggests the employment of the chlorate of potash. For the debility, etc., our sheet-anchors are ammonia and bark.

"My prescription for all cases of diphtheria is the following: ℞. Potassæ chloratis ℈iv; tincturæ cinchonæ comp. ℥ss; tincturæ guaiaci comp. ℥ss ad ℥vj; mellis q. s.; aquæ ad ℥viij. M.

"Of this mixture from one tea to two tablespoonfuls may be given, according to age; but the interval between each dose, from one to four hours or three times a day, must be regulated according to the severity of the case.

"These, then, I consider the therapeutic essentials in the treatment of diphtheria; but, in a complaint so terrible, it behooves us to resort to every possible adjuvant, however slightly it may contribute to the general good; and under this heading I am disposed to place all topical applications. My plan is to apply (by no means frequently) a concentrated solution of nitrate of silver, believing it to hasten the removal of the exudation, and to induce a more healthy action over the denuded surface. Of gargles, I consider weak vinegar and water, or what is more elegant, dilute acetic acid with infusion of roses, to be as good as any, producing slightly stimulant and astringent effects on the parts, and washing away offensive detached particles. Externally, warmth applied after the manner of poultices, of which a bag of chamomile-flowers is as convenient as any, together with mild terebinthinate embrocations applied two or three times a day, are to be recommended. Like most of my fellow-practitioners, I avoid mercurials; and, should the bowels require moving, castor-oil or the milder laxatives suffice.

"The *diet* should be nutritious, with an increasing allowance of wine from the first. Lastly, we should ever be on the alert to remove as far as practicable the primary cause of the complaint by attention to every sanitary particular."

16. *Action of Steel upon Phthisis.* By Richard Payne Cotton, M.D., Physician to the Hospital for Consumption, Brompton.—The following observations upon the action of steel, were made upon twenty-five in-patients of the Consumption Hospital. As in all my preceding experiments, I studiously avoided any selection of cases, and excluded only those in which the disease was obviously too far advanced to render any kind of treatment available, and those in which there existed some complication which would tend to negative the result.

Of the twenty-five patients ten were males and fifteen females. Six were in the first, six in the second, and thirteen in the third stage of the disease. Ten were under the age of 20, and the rest were between 20 and 40 years of age.

I selected the old *vinum ferri* as being the most simple of the many forms of iron, as well as one which is seldom objected to, and is rarely found to disagree. At the commencement I prescribed two drachms twice a-day, each dose being gradually increased to half an ounce, and in some few instances to an ounce. The treatment was continued for periods varying, according to the different cases, from four to thirteen weeks. In two or three of the female patients, the steel seemed to cause slight headache, which, however, gradually disappeared when the dose was lessened or temporarily discontinued. During its use, the patients' appetites were usually very good, and there was not the slightest indication of increased liability either to hæmoptysis or any other active symptom of the disease.

Of the twenty-five patients, thirteen *greatly* improved; three *slightly* improved; and nine derived *no benefit;* of these, three died in the Hospital.

In thirteen of the cases cod-liver oil was occasionally but not regularly taken in conjunction with the steel; but in the remainder, no other medicine was administered except some simple linctus for the cough. Fourteen patients increased in weight—some of them very considerably; eight lost weight; and three remained unchanged in weight. Nine of the fourteen cases in which the weight increased were of those who had taken cod-liver oil. One of these patients, in the second stage of the disease, illustrated the remarkable but not very rare phenomenon, of increasing in weight, whilst both the local and many of the general symptoms of consumption were steadily advancing.

Of the thirteen patients *greatly* improved, several left the Hospital with their general health restored, and their active symptoms dissipated. Four were especially remarkable for the improvement they exhibited, being able, in spite of the unmistakable existence of pulmonary cavities, to resume their several pursuits on leaving the Hospital.

Seven of the thirteen improved cases were under the age of twenty—a large proportion, if we consider the respective ages of the patients.

Perhaps I may here remark, that although I had not hitherto compared and tabulated the cases I have treated with steel wine, I have long been in the habit of prescribing this medicine, in conjunction with cod-liver oil, to phthisical and strumous patients, especially to children and young persons, and have always placed great faith in its efficacy. I have, indeed, always considered it amongst the most useful remedies in this class of diseases; and in this homage to the *vinum ferri* very many of my medical brethren will doubtlessly join. That the remedy fairly deserves to be thus estimated, is, I think, sufficiently shown by the experiments I have detailed.

After I shall have recorded similar observations upon a few other substances which are now undergoing probation in my Hospital wards, I hope to give a general summary of their comparative results. And, although I am quite willing to admit that any conclusion at which I may arrive in the course of these experiments must necessarily be imperfect, and at most but an approximation to truth—considering that, in order to reach the actual truth, many insuperable difficulties present themselves, such as a want of uniformity in the cases, circumstances, and stages of the various patients, as well as in the season of the year, the diet, and a multitude of other circumstances—it will, I think, be nevertheless conceded, that the trial to which I have subjected the different remedies is not altogether unproductive, and that on the present occasion steel wine comes before us very favourably as a medical agent in the treatment of phthisis.

In order, however, to assimilate this paper with those which have preceded it, I would record the following conclusions:—

1. Steel wine is a very useful auxiliary in the treatment of a considerable number of consumptive patients.

2. It seldom disagrees, but tends rather to increase the appetite, and improve digestion.

3. It is especially valuable in the cases of children and young persons.—*Med. Times and Gaz.*, Dec. 14, 1861.

17. *External Application of Iodine to Remove Plastic Exudations in Pleurisy.*—M. DELIOUX uses, for the removal of plastic exudations following pleurisy, frictions with an ointment composed of iodine, two parts; iodide of potassium, eight parts; and lard, thirty parts. The skin being made perfectly clean, friction with this ointment must be made over the affected part for five minutes every morning and evening; a layer of cotton-wadding is then applied, and covered by oiled silk, the whole being secured by a bandage round the body. The application produces more or less cutaneous irritation; and, where this is severe, the remedy must be discontinued—but for as short a time as possible. M. Delioux has employed this treatment with success in a score of cases of intra-pleural exudation, some dependent on acute pleurisy, others being instances of a chronic exudative pleurisy. The duration of the treatment has varied from fifteen days to two months: in the acute cases, from fifteen to twenty days have generally been sufficient for the removal of the false membranes. The iodine thus applied is absorbed; M. Delioux and M. Castain found it in the urine.—*Brit. Med. Journ.*, Jan. 4, 1862, from *Bull. Génér. de Thérap.*, 30 Sept. 1861.

18. *Sulphuric Acid Mixture in Diarrhœa.*—Dr. ANDREW CLARK highly extols the efficacy of sulphuric acid in diarrhœa. He claims to have cured by it, given in the manner prescribed below, 74 per cent. of cases of diarrhœa within 48 hours.

When the stools are scanty and frequent, the administration of the acid is preceded by a dose of castor oil. When they are abundant and watery, the acid is begun at once: ℞.—Acid. sulph. aromat. ♏xx; tinct. camph. comp. ʒj; ætheris chlorici ♏x; spirit. menthæ pip. ʒss; syrupi rhœados ʒj; decoct. hæmatox. ad ʒj.[1] To be given every four, five, or six hours, according to the urgency of the diarrhœa. The object of the aromatics in the formula is the correction of the fecal fermentation which is one of the chief conditions in the production of diarrhœa. In some cases the second or third dose succeeds in checking the disease, and then the patient is troubled for a day or two with pinching pains in various parts of the bowels. These are best relieved by a small dose of castor oil with an aromatic. The acid is rarely successful in advanced phthisical or dysenteric diarrhœa, but it is so in the early stages of these complaints.—*Med. Times and Gaz.*, Jan. 4, 1862.

19. *Podophyllin in Constipation.*—Dr. ANDREW CLARK considers no single remedy to be so free from the objections which attach to most laxatives as podophyllin. It is not a specific for constipation, and it is not in all cases free from some of the objections attached to other remedies. But in the great majority of cases of simple constipation, it fulfils the conditions required of a safe and effectual remedy, by operating slowly, easily, and after the manner of Nature.

Podophyllin[2] is an amorphous resinoid powder, obtained by evaporation from an alcoholic solution of the root of the May apple (Podophyllum Peltatum.) In America it is used in ten-grain doses as a cathartic, of similar characters to the resin of jalap; but for use as a natural laxative, the maximum dose is one grain. If more than this is given, it produces griping and loose stools. For most persons a grain is too large a dose. It is better to begin with half-grain doses made into a pill with extract of taraxacum, which must be taken during breakfast, that it may operate next morning after that meal. For the first few days, the

[1] Or, if the mixture is to be kept, some aromatic water.

[2] Made by Davenport, of Great Russell-street, Bloomsbury.

operation of the drug may be accompanied by a little griping and by unformed stools. Should these continue to the fourth day, administer only quarter-grain doses, and combine them with an equal quantity of ipecacuanha. If after, the drug does not operate in the manner described, it is not likely to prove successful, and had better be relinquished. When the right dose is determined, its use may be continued without fear of injurious consequences; and instead of requiring to be increased, may after a time be diminished without affecting the success of its operation.—*Med. Times and Gaz.*, Jan. 4, 1862.

20. *Oxalate of Cerium in Epilepsy.*—Dr. Ramskill has used oxalate of cerium lately at the Hospital for the Epileptic and Paralyzed. He says it has proved serviceable in some cases of epilepsy, having as an aura, or premonitory symptom of the attack, some commotion of the stomach or duodenum evidenced by a feeling of agitation at the epigastrium, accompanied by a sense of sinking, fainting, and disordered movement, but unconnected with palpitation. In three cases, which we shall give shortly, the epilepsy was cured. It has not proved useful in any degree in any other forms of epilepsy, where the premonitory symptoms had relation to the head, as vertigo, confusion, etc., nor to the heart, as palpitation, or feeling of cessation of the heart's action, nor, indeed, to any other variety except in the one mentioned, which seems, he believes, to have its origin in failure of action of the splanchnic ganglia. He thinks that the oxalate acts as a sedative and conserver of nervous force. The sedative action acting on the periphery of the pneumogastric, conveys this influence to the grand centre of excito-motory action, the medulla, and thus not only prevents an impending attack, but diminishes the chance of future fits by lessening morbid excito-motor sensibility.—*Med. Times and Gaz.*, Jan. 4, 1862.

21. *Efficacy of a Combination of Cubebs and Copaiba in some Affections of the Neck of the Bladder and of the Prostatic Part of the Urethra.*—Dr. Caudmont has employed cubebs and copaiba in different affections of the neck of the bladder and of the prostatic portion of the urethra, and the results have convinced him that these medicines exert a much more certain action over these parts than over the anterior portion of the urinary canal. In some cases, he administered the copaiba alone, in other cases the cubebs alone; but in general he combines these two drugs, because it appeared to him that the digestive organs were more tolerant of their administration in this form. The morbid conditions in which these medicines are indicated, may be referred to forms of neuralgia or inflammation. The neuralgic cases begin suddenly, without being preceded by any functional disturbance, and the symptoms are immediately very severe; there is frequent desire to make water, severe pain during that process, and especially at its conclusion, and darting pains along the inferior surface of the penis during the intervals of micturition. This neuralgic form occurs in persons who are subject to neuralgia in other parts of the body. The other class of cases presents an inflammatory character, and a few drops of blood are voided at the end of each act of micturition. The greater number of such cases may be referred to a blennorrhœal or rheumatic origin, and the urine deposits gravel, or contains a considerable quantity of mucus or muco-pus. In all these cases, whether neuralgic or inflammatory, the use of copaiba and cubebs is very successful, and entirely removes the pain in from twenty-four to forty-eight hours. Dr. Caudmont administers these medicines in the form of sugar-plums (*dragées*), each containing forty centigrammes of the mixed cubebs and copaiba (a centigramme is .1543 of a troy grain), and fifteen, eighteen, or twenty-four of these are given every day, according to the intensity of the disease.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1862, from *Bull. Gén. de Thérap.*, July 30, 1861.

22. *Cubebs in Simple Urethritis of Women.*—Prof. Trousseau remarks that simple urethritis is a disease which is tolerably frequent in young girls, but more frequent in married women, and it is characterized by a frequent desire to make water, with severe smarting during micturition, and vesical tenesmus lasting some minutes afterwards. Trousseau has known patients obliged to go to the water-closet ten or fifteen times in an hour, and after having passed a few drops

of urine they went on straining for a minute or more, so imperious was the sensation of desiring to evacuate the bladder, which, however, was perfectly empty. In some cases, it would appear that the inflammation is propagated to the mucous membrane of the bladder. Trousseau has never found this disease to assume a serious form, and it is seldom accompanied with fever, but there are often pains in the loins and hypogastrium analogous to those observed in cystitis and metritis. Urethritis is rather common after lying-in, after miscarriage, or at the period of menstruation, and in some cases it appears to be connected with an herpetic diathesis. Whatever may be the exact form of this disease, cubebs are successfully employed in its removal. Trousseau has employed this treatment for more than twenty years, and the use of cubebs was suggested by its efficacy in venereal blennorrhagia. In simple urethritis it is not necessary to give large doses of cubebs, and in general the powder may be prescribed in the dose of ʒss to ʒj, twice a day, at meals. It should be continued several days, and as long as the symptoms last; when improvement begins the cubebs are given only once a day for a week, and in the following week, if the improvement continues, the cubebs are given only once every second day.—*Ibid.*, from *Bull. Gén. de Thérap.*, July 15, 1861.

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23. *Poisoning by Opium treated by Belladonna.*—A man who had drunk about an ounce and a-half of laudanum came under Dr. MOTHERWELL'S treatment at the Melbourne Hospital, deeply comatose, and with the pupils contracted to pin's head size. Doubting the propriety of treating this description of case by keeping the patient in constant motion, and the employment of galvanism, and desirous of testing the reputed antagonistic action of belladonna in overdosing from opium, Dr. Motherwell prescribed the tincture in such quantities that the patient had taken eleven drachms and a-half in less than three hours. Effectual dilatation of the pupil did not take place until then, the patient rapidly recovering from the effects of both poison and remedy. This case being a solitary one, and the laudanum having been taken fourteen hours before the the belladonna was begun, nothing very conclusive can be drawn from it; but Dr. Motherwell, in another case of opium poisoning, would not hesitate to prescribe still larger doses of belladonna, rousing the patient occasionally, or applying the cold douche for a minute or two when the coma was profound.—*Med. Times and Gaz.*, Jan. 4, 1862, from *Australian Medical Journal*, Oct. 1861.

[The preceding case tends to confirm the observations of Dr. C. C. Lee (see No. of this Journal for Jan. 1862, p. 54) as to the antagonistic effects of opium and belladonna. A very remarkable case has lately occurred in this city, an account of which we are promised for our next Number, which we conceive to be very conclusive as to the same fact. In this case *seventy-five* grains of morphia were swallowed with suicidal intent, and the patient, after taking *fifty* grains of the best extract of belladonna, recovered.—EDITOR.]

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24. *On some Affections of the Cæcal Portion of the Intestines, with illustrative cases.*—Dr. REED read an interesting paper on this subject before the Royal Medical and Chirurgical Society (Jan. 14, 1862), the principal object of which was to bring under the notice of the Fellows the four subjoined cases, which present some remarkable features of a practical nature; it was deemed to be superfluous and misplaced to enter upon the diagnostic signs of the several abnormal conditions with which lodgments or accumulation, together with their results, in the cæcal portion of the intestinal canal, might possibly be confounded; but it might be stated, in speaking of diseases of the intestinal tube, that two conditions are recognized—the one resulting from an excessive accumulation of intestinal contents at some particular part of its course, as the primary cause; the other, as commencing in the structure of the intestine itself, apparently independent of any accumulation or lodgment; and to these a third may be added, resulting from formations that take place exterior to the intestinal tunics, but occasionally influencing the diameter of its canal and its functions. The most reliable signs of lodgment or accumulation in the cæcal portion of the intestine are of a local character; and it is essential to bear in mind, that pain without the coexistence of other symptoms, is not to be depended upon, as in

obstruction in the left iliac region pain is frequently referred to the right side or umbilicus. A local tumour can generally be detected, with defined margins, painful on pressure, from which the pain seems to radiate, and which may depend on simple distension only, or upon inflammation in the tunics of the canal, varying in degree from the most simple to the most severe stages of inflammation and its results. The habit of the patient, and the previous history of each case, are important in forming the diagnosis. If accumulation merely exist, the obvious remedy is to unload the distended bowel; and this is best accomplished by the use of the warm hip-bath, and by small and frequently-repeated doses of the watery extract of aloes, in the form of pills, with soap, combined or not with calomel, or, in some asthenic cases, with extract of nux vomica, if not contra-indicated. In cases where this object is effectually accomplished, the impending inflammatory stage is not developed; but should this not be the case, the inflammatory complications and consequences are, in the opinion of the author, best treated as briefly detailed in the subjoined cases:—

Case 1.—A. B., aged 18, the son of a gentleman residing in Surrey, being in perfect health, and having no hereditary tendency to disease. In the evening of August 12, 1858, he ate a large quantity of unripe plums. During the night, having pain in his bowels, he took some strong purgative medicines, which acted very violently, dislodging a great many plum-stones. Mr. Nowell Stowers, of Kensington, saw him the following morning. He was suffering from constant tenesmus, and severe pain in the bowels of a colicky nature, especially in the right iliac region. On the evening of the following day I saw the case, and subsequently attended in consultation with Mr. Stowers. There was a distinctly defined swelling, about the size of a small orange, in the region of the cæcum, dull on percussion, and painful on pressure; febrile symptoms, with diffused peritonitis, came on, but no sickness. For some days subsequently the swelling increased considerably in size, and the general symptoms became much aggravated. Tympanitis, hiccup, and prostration ensued, and liquid muco-feculent evacuations, tinged with blood, passed frequently. The treatment consisted of calomel and opium, given in small and frequently-repeated doses. Opiate suppositories were used, also turpentine stupes, succeeded by warm fomentations and poultices; perfect rest in the prone position; fluid animal and farinaceous diet, all solids being prohibited. On the fifth day the patient showed evidence of being slightly under mercurial influence, and from this date the symptoms gradually diminished in intensity; but a solid swelling, about four inches in circumference, remained in the right iliac region, painful on pressure. Blisters, iodine, and mercury were applied locally, and various measures to support the strength. At the end of three weeks he was allowed to sit up in a chair. After an action of the bowels it was discovered he had passed a portion of intestine, about ten or twelve inches in length, without pain, or being himself aware of any unusual occurrence. He was again strictly confined to the recumbent position, with fluid farinaceous diet only for a considerable period. Eventually he entirely recovered, and is at the present time in perfect health, three years having elapsed. The preparation exhibited consists of the portion of intestine voided, being about ten inches of large intestine, together with the cæcum and vermiform appendix; of the former only about one-third of the calibre of the canal, while the entire tube of the appendix is present. It has been given to the Royal College of Surgeons for the Museum, where no preparation of a similar kind exists.

Case 2.—A. J., aged 14, a healthy girl, in April, 1846, was suddenly seized with pain in the right iliac region, her bowels having been previously very constipated. She took some strong aperient medicine, which produced no effect. I saw her the following day. Being a very nervous, hysterical girl, the early diagnosis was rather masked, but the abdomen appeared distended and painful. After a warm hip-bath and a copious turpentine enema the bowels acted twice freely. Subsequently, frequent doses of calomel and opium, leeches, followed by a turpentine stupe, perfect rest in the recumbent position, and restriction to fluid nourishment, were prescribed. On the following day the abdomen was less distended, and a defined tumour, painful on pressure, about three inches in extent, and dull on percussion, was readily felt in the region of the cæcum. The in-

flammatory symptoms became gradually more severe, and on the fourth day she appeared to be approaching a state of collapse. The calomel and opium was discontinued, and stimulants were substituted. She rallied under this treatment. On the eleventh day, a portion of intestine, six or seven inches in length, was voided per anum—apparently colon. Severe dysenteric symptoms followed, controlled by sulphate of copper and opium, no solid food being allowed. After an anxious period of some weeks, she gradually recovered, and has continued well to the present time.

Case 3.—A. B., aged 20, a strong, healthy young man, on rising from bed, quite well, early in the morning, ate hastily several unripe apples. About four hours afterwards he was seized suddenly with intense pain in the right iliac region, and forthwith took some aperient medicine, which acted freely. I was requested to see him a few hours afterwards. He was lying on his back, with his right thigh bent, and complained of extreme pain in the region of the cæcum, increased on firm pressure. No local tumour could be detected. He had vomited the meat breakfast he had eaten, and had an anxious look. He indicated the exact spot where, he said, "he was sure some part of an apple had stuck"—in the region of the cæcum. The pain rapidly increased, acute inflammation set in, with tympanitis, and he died in great suffering on the fourth day. Bleeding, leeches, calomel and opium, the latter in large doses, turpentine stupe, warm poultices, perfect quiet, with fluid nourishment only, constituted his treatment generally. On examination, general abdominal inflammation was found to have existed, but most intense and advanced about the cæcum, which appeared to have been loosely connected congenitally, and was, together with the vermiform appendix and about four inches of intestine (ileum), invaginated in the ascending colon. In the interior of the cæcum, a portion of the core of an apple, about one-third of an inch, was firmly imbedded in the free margin of the ileo-cæcal valve, and was with some difficulty removed from its bed.

Case 4.—A lady, aged 23, very healthy, on the 17th of November, 1849, was seized suddenly with violent pain in the right iliac region, and was attended by a medical gentleman, who prescribed leeches and other remedies. I was requested to see her the same day, and learnt that the bowels had been habitually very constipated during the previous month. There was no hernia, but a distinctly defined tumour, dull on percussion, in the region of the cæcum. On examination by the vagina, the tumour could with difficulty be reached; but the right ovary was readily detected, distinct, and much larger than ordinary. Calomel-and-opium, in small and very frequently-repeated doses, was ordered. Turpentine stupes, succeeded by warm poultices, to the abdomen, and also a large turpentine injection, which dislodged a quantity of hardened feces, were prescribed, with perfect rest, and fluid nourishment only. The symptoms of inflammation became more severe and diffused; the local swelling increased considerably, attended with most acute pain in the hip, so much so that the patient attributed all her disease to the hip-joint; œdema of the whole thigh, leg, and foot to a great extent followed; and all the symptoms became so aggravated that she appeared *moritura*. The gums showed evidence of mercurial action, and she was able to take fluid nourishment and stimulants *ad libitum*. Sir Charles Locock and Dr. Fergusson saw the case about this date in consultation with me. Shortly afterwards an abscess evidently was forming, and pointing just above the middle of Poupart's ligament. Her state appearing almost hopeless, no satisfactory relief having taken place from the upper bowels for nearly three weeks, a large enema of gruel with turpentine and ox-gall, was administered, and in half an hour nearly two chamber-vesselsful of most offensive fecal accumulation passed per anum, followed by great prostration; but she rallied under the use of large quantities of stimulants. The pain in the hip and œdema gradually subsided from this period. After five weeks from the commencement of her illness the abscess burst externally; a large quantity of offensive pus, mixed with fecal matter, was discharged, and continued daily. A fistulous opening with the cæcum apparently became established, more feculent matter passing by this outlet than per anum. Her condition varied for a long period. At length she was well, excepting the fecal fistula, which was most loathsome. After eight months from the commencement of her illness, Sir

Benjamin Brodie saw the case in consultation with me, and advised her having a couch made so as to be recumbent on her face night and day for several months; one-drachm doses of powdered cubebs were administered twice a-day, and the edges of the wound touched with nitrate of silver. Her general health improved. The position on the face gave so much relief that she strictly followed the treatment. After five or six months the discharge ceased entirely, and within twelve months she was perfectly well, and has continued so up to the present time.—*Med. Times and Gaz.*, Jan. 25, 1862.

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25. *On Certain of the Early Symptoms of the Eruptive Fevers.* By Dr. See.—To say that a child is about to have an eruptive fever, and to announce beforehand that the disease will be measles, scarlatina, or smallpox, is a point of great interest, if not for the child, at least for the practitioner. It is the surest means of acquiring, from the first, the confidence of the family, for there is no doubt that people think more of the accuracy of the diagnosis and prognosis of a physician, than of all the care and intelligence he may have shown in the treatment of the case. "Let us see, then," said Dr. See, "what are the prodromata of the eruptive fevers of which the observation is important."

A character common to the eruptive fevers is the suddenness of invasion, accompanied by a peculiar state of precordial anxiety, as pointed out by Borsieri. In typhoid fever the invasion is preceded by a lengthened period of discomfort; the child has lost its gayety, and is fatigued without cause; this state lasts for several days.

Scarlatina is sometimes ushered in by symptoms which simulate cholera. Six months ago Dr. See was sent for to see the grandchild of a physician, who, at two o'clock in the afternoon, had been seized with choleraic symptoms. Dr. See could not see the child till half past five o'clock. By this time, however, the eruption of scarlatina was manifest. Had the physician arrived sooner, he would not have seen the eruption, but he would have examined the throat, and would infallibly have found the angina which always precedes and accompanies scarlatina.

Measles does not give rise to vomiting, which, however, is a premonitory symptom of scarlet fever and smallpox. If then there is vomiting, and no affection of the throat, examine the arm. If the vaccination cicatrix be well marked, there is every chance that the smallpox will be mild. One of the constant precursors of smallpox, and on which Professor Chomel always laid great stress at his clinique, is pain in the loins. Also examine the back, for it is there that the first spots of smallpox make their appearance. In smallpox, also, the fever is continuous. In measles the premonitory fever is often remittent, or even intermittent. You have seen a child in the evening, feverish; next morning he seems lively, you are told that he has taken food, and you go away fancying that the little attack has passed off; then the fever returns, and soon other symptoms announce that the child is about to have measles; these other signs are the lachrymo-nasal catarrh, which appears about the third day. It may be said that influenza presents the same symptoms. No doubt, the resemblance is pretty close. There is remittent fever, subject to exacerbations, and towards the third day the nose and eyes are affected. But to remove all doubts, it will be sufficient to auscultate the chest. If the disease is influenza, you will find already (by the third day) the signs of bronchitis; whilst if you have to do with measles, the results of the examination will be negative. In fact, it is on the fourth day that a child who has had a remittent fever, followed by a lachrymo-nasal catarrh, is seized with the characteristic cough. This cough, with its muffled sound, sometimes suggests to the parents the idea of croup, or hooping-cough. It is neither one nor the other; it does not come on in paroxysms. As in influenza, it consists of separate coughs closely following one another, and which continue till the eruption makes its appearance.

One word on a complication which may render the diagnosis of certain eruptive fevers obscure. The scarlatina eruption sometimes appears within the first six hours, rarely later than twenty-four: but it sometimes happens that smallpox is preceded by a scarlatiniform eruption, which has been especially described

in England. This rash is sometimes limited to the belly. But even here there is no room for doubt. The rash does not appear till the second day, and if you examine your patient minutely from head to foot, you will find, especially on the back, some spots of smallpox. In fact, when the rash is present, the smallpox eruption has already commenced. Twice, a distinguished physician of Paris compromised his reputation by announcing scarlatina, while Chomel found, by examining the back, that he had to do with cases of smallpox.—*Edinburgh Med. Journ.*, Dec. 1861, from *Journ. de Méd. et de Chirurg. Prat.*, Oct. 1861.

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26. *On the Temperature, Urea, Chloride of Sodium, and Urinary Water in Scarlet Fever; and on a Cycle in Disease and Health.*—Dr. SIDNEY RINGER presented a paper with this title to the Royal Med. and Chirurg. Soc. (Jan. 28, 1862). The observations were made on patients in the Hospital for Sick Children, under the care of Drs. West, Jenner, and Hillier. Thirty cases are given. The temperature, taken several times during the day, is given in charts. The urea and chloride of sodium were estimated daily by Liebig's volumetric method. The observations extended over a variable time, in some cases till the forty-fifth day of the disease.

I. *On the Temperature.*—1. This fell, in the great majority of cases, on either the fifth, tenth, or fifteenth day of the disease. 2. When the temperature remained high till the fifteenth or the twentieth day, a fall of variable intensity occurred, usually on each of the preceding fifth days—namely, the fifth, tenth, and fifteenth. The temperature after each fall in some cases remained during the subsequent five days, at the same point reached on the preceding fifth day; in other cases it rose again, reaching during the second or third five days a point as high as it did during the first five. 3. Each fall of the temperature is accompanied by an improvement in the state of the patient, which remains permanent when the temperature does not again rise. 4. Of seventeen cases that came early under notice, the average maximum temperature was a little above 103°. 5. Subsequent to the great fall experienced on the fifth, tenth, or fifteenth day, the temperature often remained rather too high over a variable time, in some cases for fifteen days. The degree of elevation varied, in some cases being between 100° and 101°, but more frequently between 99° and 100°. This elevation of the temperature also usually experienced a fall on each fifth day. 6. This subsequent elevation of the temperature, if of any persistence, was coincident with a continuation of the lesions produced by the scarlet fever, as sore-throat, etc. It sometimes preceded an attack of Bright's disease. 7. At a variable period after the scarlet fever, another elevation of the temperature occurred, due either to Bright's disease, endocarditis, tuberculosis, or chickenpox; in two cases the cause could not be ascertained. 8. The date of the second elevation varied; thus, counting from the commencement of the scarlet fever, in albuminuria the mean of six cases gave the twenty-second day; in two cases in which the elevation was probably due to endocarditis, the elevation began on the eighth day; in one case of chickenpox it commenced on the sixth day; in one case of tuberculosis, on the ninth. 9. The duration of the elevation due to the above causes varied from two to thirteen days. 10. This subsequent elevation of the temperature due to intercurrent disease always fell either on a fifth day from its own commencement, or on a fifth day from the commencement of the scarlet fever. 11. Thus the temperature forms arcs or cycles, lasting in the majority of cases five days; this equally applies to the temperature of the scarlet fever, or of any subsequent intercurrent disease. 12. In severe cases the temperature remained at the same point throughout the day; in slighter cases it fell in the morning and rose during the day; this fall in the morning is one of the earliest signs of improvement. 13. The hour of the day at which the temperature reached its highest point varied greatly. It was most frequently at its highest at some time between 2 P. M. and 8 P. M.

II. *On the Urea.*—1. The urea appears to suffer no increase during the fever. 2. The amount of urea for many days after the decline of the fever is far below the amount normal to the patient. 3. From the above, the author thinks it probable that the kidney is affected from the commencement of the attack, and

the elimination of the urea thus checked. In some of the cases the children were puffy about the face, without any blood or albumen occurring in the urine; this perhaps was caused by the retention of urea. 4. On the intercurrence of Bright's disease, the urea in some cases was greatly diminished; in other cases no diminution occurred.

III. *On the Chlorides.*—1. The chlorides were never found absent in any of the cases analyzed. 2. Their amount was always much diminished during the fever days. 3. After the fall of the temperature the chlorides increased gradually. 4. In one case in which Bright's disease supervened the chlorides were estimated; they suffered very little diminution.

IV. *On the Urinary Water.*—Often during the fever there is no diminution in the amount of urinary water; in some cases it is increased.

V. *On the Albumen in the Urine.*—1. The albumen appears at two different periods: (*a*) during the fever days; (*b*) later during the non-fever days. Out of twenty-one cases, it only appeared once during the fever days. Of eighteen cases which were in the hospital for a considerable time, in seven albumen appeared during the fever free days. 2. The time of its appearance varied from the ninth to the twenty-third day. 3. The duration of the albumen in the urine varied from three to forty-nine days. 4. There is no necessary connection between the intensity of the inflammation (tested by the elevation of the temperature) and the duration of the albumen in the urine. 5. There is no necessary connection between the intensity of the inflammation and the amount of albumen in the urine.

VI. *On Blood in the Urine.*—1. There may be an elevation of the temperature, due probably to inflammation of the kidney, without any blood in the urine. 2. In no case did blood appear without previous elevation of the temperature. 3. In some cases the blood continued long after the fall of the temperature, and thus probably after the decline of the inflammation.

VII. *Relationship between the Blood and Albumen in the Urine.*—1. A very large amount of albumen may occur in the urine without any blood. 2. Blood to a very large amount may occur in the urine with the slightest trace of albumen; and if the blood-corpuscles be allowed to settle, the supernatant fluid may give no evidence of albumen. These cases given were seldom dropsical; they, however, often looked puffy in the face. In some cases the second elevation of the temperature due to Bright's disease was not followed even by puffiness. In one case the patient was puffy, without any other indication of Bright's disease.

VIII. *On a Cycle in Disease.*—In the cases given, the temperature did not run an equable course, neither remaining at the same temperature throughout; but formed cycles, composed of a variable number of days, each cycle, however, being composed of the same number of days in the same patient. The cycles in the great majority of cases were composed of five days.

IX. *On a Cycle in Health.*—The author tries to prove from the cases given, that in health we have a daily and a five days' cycle of tissue change. He further tries to show that in fevers we have a great increase of this daily and five days' cycle of tissue change, from which results the great elevation of the temperature.—*Med. Times and Gaz.*, Feb. 15, 1862.

27. *Influence of Lactic Acid upon the Endocardium and in the production of Rheumatism.*—Virchow notices the experiments of Dr. Richardson in which he seeks to prove directly what Prout had originally supposed, which Williams and Todd had also conjectured—that the accumulation of lactic acid in the body was the cause of rheumatism. He also alludes to the observations of Schenlein, of Joseph Meyer, and of an anonymous writer, "A. W." on the same subject.[1] He remarks that none of the German observers, in their experiments, had found that rheumatoid affections of the limbs had been produced, and Virchow suggests that possibly in certain cases in which it was supposed that such had been artificially produced, the appearances were the result of

[1] Götting. gelehrten Anzeige, 1859, st. 168, s. 1668.

injury to the joints occasioned in the necessary operation of binding the animal's limbs.

It was, however, quite different with regard to the influence of lactic acid upon the endocardium. On this point the observations of Richardson had been abundantly confirmed by late experimenters. In eight cases in which RAUCH had injected lactic acid into the jugular and abdominal veins, changes in the endocardium, and gelatinous thickening of the valves, were produced; and even eight hours after injection into the jugular veins these effects were found. Rauch, who had minutely examined the thickened and swollen granular parts of the valves, takes exception to the statement of Richardson, that it was the result of an exudation. He found, as Virchow had often previously found in the human subject, that it consisted of a soft mucus-like tissue, with an increase and growth of the connective-tissue corpuscles, which at a later period undergo fatty changes, and that an epithelium existed. He concluded that the influence of the lactic acid was exercised not upon the free surface, and this especially as the right side of the heart was not much affected.

Dr. MÖLLER looks upon the swelling and redness found at the edges of the valves as a post-mortem phenomenon, and says they do not occur in animals examined directly after death. Both Rauch and Möller found in some cases a want of rhythm in the heart's movements and systolic bruits. Möller considered the murmur to be anæmic, whilst Rauch attributed them to an affection of the valves.

Dr. G. REYHER, encouraged by Virchow, was led to undertake a series of examinations of the hearts of dogs which were killed without having had lactic acid injected into them. These dogs were of every age up to nineteen years old, were killed in the speediest possible way by prussic acid or the blowing of air into the jugular veins, and their hearts were examined as quickly as could be. On opening the very first heart of an apparently healthy dog, the author found that the very same anatomical changes in the heart's valves existed as Rauch and Richardson found after their injection of lactic acid. Thirty-two dogs were sacrificed in all, and similar changes, in a greater or less degree, and evidently of various dates, were universally found, except in fœtal hearts. Moreover, in one dog, in which the writer had during life injected a solution of lactic acid (according to Richardson's directions) into the peritoneal cavity, and which died twenty hours after, on examination after death the results of a *chronic* endocarditis were found, but nothing like the remains of any acute endocarditis. The various conditions of the valves and their appendages, as displayed after death in these dogs, are minutely given, and their development, as it were, traced from the simplest up to the most decided form of alteration. Moreover, the microscopical characters of the altered valves and new formations are elaborately given in detail, sections as well of the fresh structures as of prepared parts having been carefully examined. For these general and minute descriptions we have not room in this place. In conclusion, from the observations of the author, the following are interesting:—

1. That dogs, and probably also many other mammalia, are not so free from pathological changes in the heart as is supposed, and consequently that great caution is necessary in drawing inferences from such experiments upon these animals. (Dr. Albaum also found in the hearts of young horses, cats, and rabbits, similar changes to those found by the author in the dog.)

2. That in all the thirty-two apparently healthy dogs whose hearts were examined, the changes observed were "identical" with those described by Richardson and Rauch as the result of lactic acid injection, and called by the latter "parenchymatous endocarditis."

3. As Richardson and Rauch have not sufficiently avoided sources of error (owing to neglect of the examination of healthy dogs), their investigations are of no value in support of the supposed origin of endocarditis from the injection of lactic acid into the peritoneal cavity or jugular veins.

4. Consequently, that endocarditis arises from an accumulation of lactic acid in the blood remains *un*-proven.—*Brit. and For. Med. Chir. Rev.*, Jan. 1862, from *Virchow's Archiv.*, Bd. xx. and xxi.

28. *Diabetes Mellitus—Lesion of Fourth Ventricle.*—An interesting case of this is related in *Gazette des Hôpitaux*. The subject of it was a young man, 29 years of age, in the wards of M. Tardieu at the Lariboisière. The malady with its insatiable thirst commenced in 1859, and at its outset was accompanied by symptoms of nervous disorder. Weakness of the left side of the body was perceptible; the patient limped, or rather dragged the left leg; he noticed that the left arm and hand had lost power, and moreover that sensations of creeping occurred in the extremities. The nervous symptoms abated at the end of three months, but the diabetes, in spite of treatment, held on its course. The vision then became affected, and the existence of partial atrophy of the papilla was revealed by the ophthalmoscope, and eventually the patient succumbed to tubercular consumption. At the post-mortem examination, a marked congestion was noticed in the root of the fourth ventricle, towards the "calamus scriptorius," and the calibre of the neighbouring bloodvessels was found to be more voluminous than in the normal condition. No actual disorganization of the cerebral substance was detected. The congestion, as above described, is referred to by M. Luys as the first stage of diabetic cerebral alteration.—*Lancet*, Feb. 15th, 1862.

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29. *Fatty Diarrhœa Attending Diabetes, or Pimelorrhœa.*—M. Bouchardat describes a symptom attending diabetes, to which he gives the name of pimelorrhœa (πιμελη, fat, ῥέω, I flow). It sometimes happens that, after the quantity of urine has been reduced even to the normal standard, the general health of the patient continues impaired. This is generally attributable to loss of appetite, or insufficient or improper nourishment: but sometimes, even though the appetite and the food be apparently good, there are irregular, frequent, and abundant alvine evacuations. Many diabetic patients have obstinate constipation, accompanied periodically by very copious alvine dejections, and sometimes by bilious vomiting, followed by extreme prostration. M. Bouchardat relates, in illustration, the case of a diabetic patient under his care, whose urine had become normal in quantity and quality. A large amount of starchy food was taken; and still the patient became daily more weakened and emaciated. On examining the stools, which occurred five or six times in twenty-four hours, M. Bouchardat found them copious, black, with little odour, and of semisolid consistence. At the time when they were discharged, a large quantity of oil floated on them, and became solid in cooling. The fat evacuated consisted of oleine, margarine, and stearine, with traces of cholesterine. This discharge of fatty matter took place in spite of the removal, as far as possible, of all fat from the food. On several occasions, however, M. Bouchardat succeeded in diminishing it by reducing the supplies both of fat and of starchy matters in the food, and by ordering regular and energetic exercise. The patient's occupation, however, being sedentary, prevented him from carrying out the instructions fully; and he died after a severe attack of diarrhœa. M. Bouchardat believes that this fatty diarrhœa attending diabetes results from the exaggerated transformation of the starchy materials into fat; and that it is only a transformation of diabetes or glycosuria. In diabetes, the sugar is carried off by the urine; in pimelorrhœa, the fat is removed by the intestines. The symptoms in both forms of disease are the same, only they are more violent in pimelorrhœa than in diabetes.—*Brit. Med. Journ.*, Dec. 21, 1861, from *Bull. Gén. de Thérap.*, 15 July, 1861.

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30. *Laryngoscopy.*—Dr. Lewin, of Berlin, made an interesting communication on this subject to the Medical Section of the Congress of German Naturalists and Physicians at their late session. The author introduced his subject by stating that it was not difficult to understand why laryngoscopy should have so quickly found admittance into the practice of medicine, as by its means we are able to recognize diseases of organs, which had hitherto been inaccessible to direct observation, and the morbid changes of which have not only a direct and immediate interest as far as they are concerned, but are also important as frequently reflecting diseases of remote organs, such as the lungs, the heart, and even general dyscratic disorders; besides, we may by the same means succeed in per-

forming local applications, and even surgical operations, which had been all but impossible before.

After having demonstrated his laryngoscope, which is in many respects superior to that of M. Czermak, Dr. Lewin proceeded to describe the appearance of the pharynx, larynx, and the trachea in the living body, and the best method of investigating the condition of these organs. He first considered in detail the vocal cords, which are in many persons, especially in professional singers, unusually red without being diseased. They undergo considerable changes in the mild and severe forms of acute catarrh, in which we either find them covered with disseminated spots, or they present a most intense redness throughout. Sometimes a strongly distended vein is seen to run parallel with the free inner edges of the vocal cords. In two cases of this kind which came under the notice of Dr. Lewin, the medical attendant had diagnosed croup on account of the cough and dyspnœa; but the affection consisted of a true specific inflammation of the vocal cords, which appeared quite bloody, and a speedy cure by local applications was brought about. In chronic catarrh, the colour of the vocal cords becomes also much changed, and the mucous membrane thickened. Granulations and excrescences are also formed upon them, which may be quite similar to those caused by syphilis. The changes of the voice are of a different character, according to the spots affected and the intensity of the disease.

Ulceration in consequence of catarrh has never yet been observed in the vocal cords. If there is great loss of substance, the patient is generally either syphilitic or tuberculous. The differences between the syphilitic and tubercular ulcers are in many cases so considerable that from them alone a correct diagnosis of the constitutional distemper is possible, without any regard to the other symptoms. The extent of the ulcers and the cicatrices, and the places occupied by them, determine the nature of the changes of the voice.

Amongst the disturbances of mobility to which the vocal cords are liable, the chief are abnormal tension, with unsymmetrical movements of the arytænoid cartilages. This may be congenital or acquired. Dr. Lewin related an interesting case of the former, in which hoarseness and a sort of intermittent hooping-cough was hereditary, in consequence of this affection. In other cases the movements of the vocal cords are insufficient, so that they do not approach the median line in an equal manner. The cause of this affection may be in the cords themselves, or in the neighbouring parts, as, for instance, the vocal processes, the posterior wall of the larynx, and the arytænoid cartilages. In several cases Dr. Lewin has by removing impediments to a free motion of the vocal cords, succeeded in effecting a complete and rapid cure of hoarseness and aphonia of very long standing. Paralysis of the vocal cords also occurs; and it affects either the dilatators or the constrictor of the glottis, so that there is stenosis or insufficiency. The causes of the paralysis are either central or peripheral, acting upon the recurrent nerve. It may be due to extravasation, softening and tumours in the brain, or rheumatism, aneurism, infiltration of glands and muscles, or hepatization of a portion of the lungs. Amongst the different forms of aphonia, Dr. Lewin described that caused by poisoning, by hysteria, by reflex action, and by diphtheria. In all these cases the change of voice is different, according to whether one or both cords are affected and whether the paralysis is complete or incomplete; there is then either complete aphonia, or more or less considerable hoarseness, or the voice has merely a nasal timbre, which latter may be due to paralysis of one vocal cord, paralysis or infiltration of the soft palate and impermeability of the nose. This is often accompanied by difficulties of deglutition.

The tumours which occur on the vocal cords may originate from catarrh, syphilis, and scrofula, and are generally of a benign character. According to their site and size they cause alterations of the voice, or cough and a sensation of pressure, or of the presence of a foreign body, excessive secretion of mucus, dyspnœa, and even suffocation. Such growths as are provided with a pedicle are more dangerous, but also more easy to remove.

2. Dr. Lewin then described the diseases of the arytænoid cartilages, viz., hyperæmia, swelling of the mucous membrane by infiltration; if it appears in

yellow specks, it is a sign of tuberculosis being present. Ulcers occur on the upper as well as the lower surface of the cartilages; granular degeneration of the mucous membrane is also not rare. Swelling indicates a perichondritis of the vocal process. The fold of mucous membrane between the two arytænoid cartilages is of great importance. If this is diseased, spasmodic reflex phenomena are induced, as vomiting, difficulty of deglutition, spasm of the glottis, etc.

3. The posterior wall of the larynx is often affected by thickening and ulceration, but rarely by tumours in the mucous membrane. The ulcerations are often important for the diagnosis between syphilis and tuberculosis, even when auscultation and percussion of the chest gives unsatisfactory results. If, therefore, the diagnosis between these two diseases is uncertain, laryngoscopy must be resorted to.

4. The ventricles of Morgagni are important by their modifying the voice; and morbid changes occurring in them may cause hoarseness. They are sometimes affected with swellings and tumours of the mucous membrane; polypous excrescences are frequent, and generally caused by local irritation, as fish-bones, etc., but they also follow measles and scarlatina. In old persons there is a peculiar dilatation of these ventricles, probably in consequence of atrophy of the mucous follicles, with drying up and rarefaction of the mucous membrane.

5. The epiglottis is not unfrequently affected by inflammation, œdematous infiltration, ulceration, and softening. Ulceration may be caused by syphilis, tuberculosis, and scrofula. In several cases of advanced phthisis, Dr. Lewin has observed almost total destruction of epiglottis—which is a very ominous symptom.

6. The ligamentary- and glosso-epiglottica are often affected by inflammation and superficial ulceration. This latter often causes difficulties of deglutition and obstinate cough, which resist all general treatment, but are speedily cured by local applications. In syphilis and scrofula, Dr. Lewin has seen extensive destruction of the foveæ glosso-epiglotticæ. Syphilitic excrescences are by no means rare there, and in one case a mulberry-shaped tumour of this kind caused asthmatic fits, by pressure on the epiglottis.

7. The root of the tongue often shows considerable changes of the follicular glands, which are sometimes swollen and infiltrated, especially if syphilis or scrofula is present.

8. The posterior wall of the pharynx is subject to different forms of inflammation which may be distinguished as follicular, submucous, exulcerating, hyperplastic, and varicose. Follicular inflammation is chiefly caused by catarrh, and frequently combined with abdominal plethora. Ulcerative inflammation is not always caused by syphilis; nor can the cicatrices, which are sometimes observed, be always considered as the last remnants of a venereal process. Varicose pharyngitis is often the cause of hemorrhage, which is generally confounded with hemorrhage from the lungs. Hyperplastic inflammation may cause asthmatic symptoms.

9. In certain cases it is possible to see the trachea up to its bifurcation. The morbid conditions of the trachea, as may be distinguished by means of the laryngoscope, are dilatation, especially in marastic old persons, where there seems to be atrophy of the parts, and also in asthma and bronchiectasy; hypertrophy of the mucous follicles of the posterior wall of the trachea, stenosis of this organ, either by thickening of its mucous membrane, or by pressure from cancer of the œsophagus, or by other tumours of neighbouring parts, and finally ulceration.

10. In syphilitic patients the posterior surface of the palatine arches may be ulcerated. These are also subject to paralysis. If they are thickened and the tonsils hypertrophied, the local application of chromic acid effects a cure. By this means Dr. Lewin has completely removed forty-four hypertrophied tonsils which had resisted excision. Great caution is, however, necessary in this operation, in order to avoid chromic acid being swallowed; this is easily prevented by the physician fixing the tongue of the patient with two fingers.

In conclusion Dr. Lewin reverted to the fact that polypus of the larynx, which before the introduction of the laryngoscope into the practice of medicine, generally caused sudden death, might now be easily recognized and removed. Laryn-

goscopy ought to be resorted to in all diseases of the pharynx and larynx, as in hoarseness, difficulty of deglutition, sore-throat; in cases of foreign bodies in the aërial passages, and also in tuberculosis and syphilis. It is often the only means by which we are able to decide whether a hemorrhage comes from the larynx, pharynx, or the trachea. In spasmodic vomiting, in diphtheria, and in obstinate cough, it is also advisable to employ the laryngoscope, as we may thus often find a palpable cause of the disease, and which it is then easy to remove. *Med. Times and Gazette*, Jan. 18, 1862.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

31. *Excision of the Hip-joint.*—M. LEFORT, one of the rising French surgeons, who has paid more attention to what is going on in other countries than is usual with his countrymen, recently laid before the Academy of Medicine the results obtained by the English and German surgeons from the performance of the operation of excision at the hip-joint. The cases, the particulars of which he was enabled to collect, amount to 85 in number. Of these, the results are doubtful in 13 instances, in consequence of their too early publication; of the remaining 72 cases, 42 are returned as successful, while there were 29 deaths and 1 relapse, due to suppurative osteitis. The cases are considered as successful, provided that life was saved, and the wound cicatrized; but the amount of motion possessed by the false joint, together with that of the solidity of the limb and power of using it in walking, are only specified in some cases. In 27 out of the 42 successful cases, at all events, these points are satisfactorily made out as highly favourable. In 67 cases the ages were specified, and it is found that between the ages of five and nineteen that there occurred 17 deaths in 49 cases; and between the ages of twenty and fifty, 7 deaths in 18 cases. In 30 of the cases the acetabulum, as well as the head of the femur, was excised; and in 3 of these the result is uncertain, recovery taking place in 15, and death in 11, of the cases.

M. GOSSELIN, the reporter on this essay, points out how desirable it would be to have more exact information as to the precise amount of unaided usefulness obtained in this last category, in order to be able to compare the functional condition of such limbs with that of those of patients who have recovered from hip-joint disease without operation.

The reporter, in explanation of this operation not having as yet become adopted by French surgeons, suggests that either hip-joint disease is a less dangerous affection in France than in other countries, or that its earlier stages are more successfully treated in the former country than elsewhere. His observations apply, however, only to the young subjects met with in private practice, the treatment of which cases is often very successful; while that of the far more numerous cases of hospital patients is less encouraging. Then, again, French surgeons have been deterred by the contra-indications to the operation furnished by the concomitance of pulmonary tubercle, or other fatal complication in the severer forms of hip-joint disease, by the repugnance manifested by the friends of the patients, and by the ill-success which attends great operations in the Paris hospitals, chiefly due to the prevalence of purulent infection. Lastly, the difference in the practice of the French as compared with that of foreign surgeons, may be also due to the too great proneness of the latter to resort to the knife before essaying other means of treatment, while the former have remained in ignorance of the results really due to operative procedures executed elsewhere than in France.

A section of M. Lefort's paper is devoted to a consideration of the applicability of this operation after gunshot wounds. Reasoning from analogy, both he and his reporter admit that it may be preferable to disarticulation of the

femur; but the comparative statistics of the two operations are in too imperfect a condition to determine which operation has proved least fatal. M. Larrey, speaking to this point, is unwilling to entirely discountenance excision in comminuted fracture from gunshot wounds, but in truth he can scarcely indicate the case suitable for its employment; for while, on the one hand, in the case of moderate injury by a small projectile, it is far safer practice to remain contented with the removal of the shattered fragments of bone, so again, in the case of great devastating injury, resection would prove an insufficient procedure. With respect to the application of this operation in disease of the hip-joint, he agrees with the reporter, basing his conclusion upon the numerous cases he has met with among young soldiers, that the disease is frequently curable, or its effects so much to be mitigated, as to render operations unadvisable. He believes that some of the English cases might have been otherwise treated with advantage, an opinion shared also by some English surgeons of great repute; and he thinks that the information supplied as to the power of using the limb in the cases of patients said to have recovered, is lamentably deficient. He also fears that resection of a diseased joint may become the immediate cause of the development of latent tubercular disease. Still he thinks that the operation should not be absolutely excluded, its performance being confined to the cases of adults debilitated by long-continued suppuration, in which other means proved of no avail, when diathesic or other contra-indications do not exist.

M. Malgaigne hit upon the truth of the matter when he stated that it is not so much the more favourable character of the results of the French mode of treating these cases, as it is the repugnance for the adoption of new operations —that is, although he did not say as much, when recommended *ab extra*. Thus, notwithstanding their success in other parts of Europe and America, resections of the knee are still prohibited in Paris, fatal though amputation of the thigh always proves there: and resection of the elbow has only become recognized after a desperate struggle. Not that routine has anything to do with this, adds M. Malgaigne, but an excess of prudence, which he assures us is a characteristic of French surgery—a fact which it certainly required so eminent an authority to vouch for. However, this paper of M. Lefort he regards as a step in advance towards the recognition of the possibility of resection of the hip being sometimes useful; but he insists upon the necessity of a greater exactitude in distinguishing the exact character and degree of the lesion it is adapted for. M. Velpeau declared that, so far from the subject of resection having been ignored in France, that is just the country in which its merits have been best and most effectually discussed—a statement that might well astonish his auditors. That it has not been there adopted arises from the fact of the French surgeons being better physicians, and having more confidence in other means of treatment, succeeding in curing cases which elsewhere would have been subjected to the knife. He does not believe that the disease so frequently proves fatal, as it is stated to do in England and Germany. Even in cases which resist the ordinary means, the operation would be a questionable procedure, seeing the common results of great operations in Paris. If, however, it is a fact that they succeed better in the English hospitals, this does not arise from the different regimen adapted and the better hygienic condition of these hospitals, but is due to the fact of the "English flesh" being gifted with a kind of physiological privilege which renders it more refractory to the accidents following operations!—*B. and F. Med.-Chir. Rev.*, Jan. 1862, from *Bull. de l'Acad.*, t. xxviii, and *Gaz. Hebdom.*, Nos. 42, 46, 49.

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32. *Double Amputation for Injury of both Arms—Recovery.*—Dr. Geo. Buchanan relates (*Glasgow Medical Journal*, Jan. 1862) the following comparatively rare case.—

John O., aged 43, was admitted to ward 10 of the Glasgow Royal Infirmary on the 11th of January, 1861. He stated that, about eleven o'clock the same day, the beam of a crane fell on his arms, which were stretched out before him, causing the present injuries. The left arm was found to have sustained a compound comminuted fracture a little below the elbow, the fractured ends of the

bones were protruding, and the muscles and soft parts were completely destroyed. The right hand was smashed up to the wrist joint, the bones fractured, and the skin and muscles reduced to a confused pulpy mass. There was a scalp wound on the back of the head about three inches long, the bone uninjured. The right knee was slightly bruised. The man would not consent to immediate amputation, but at 8 P. M. a consultation was called, when he agreed to submit to what was necessary. Dr. B. removed the right arm immediately above the wrist, and the left just above the elbow. Both stumps did remarkably well; but the recovery after such a combination of injuries was necessarily tedious. Dr. B. saw him in October last, and he had great freedom of motion and power in both arms. He wears a hook on the right stump; the other is quite sound, but he has not yet got any apparatus adjusted to it.

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33. *Amputation of the Tonsils in Diphtheria.*—A few years since M. Bouchut proposed the excision of the tonsils as a means of treating the early stages of diphtheria, regarding the disease as at first a local one which may be destroyed *in situ*, but which left to itself would give rise to a secondary infection of the economy. Several practitioners have followed out this recommendation with good success, and now Mr. PAILLOT communicates the particulars of three cases, occurring during a severe epidemic which ravaged the commune of Noyers in 1860, and in which he performed excision with a successful result. The tonsils were covered with false membranes, as were—in one of the cases—the whole of the pharynx and the velum; but on the extirpation of the tonsils, false membranes ceased to be reproduced.—*Med. Times and Gaz.*, Jan. 4, 1862, *Comptes Rendus*, vol. liii. No. 18.

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34. *Strangulated Femoral Hernia in a female aged ninety-five years.*—Mr. R. HARPER, of Holbeach, records (*Lancet*, Jan. 11, 1862) a case of this in which he operated with success.

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35. *Accidental Removal of the greater part of the Lower Jaw.*—Dr. John Struthers communicated to the Royal Medico-Chirurgical Society of Edinburgh (Nov. 20, 1861) a case of the above accident, the particulars of which had been placed in his hands by Mr. JOHN THOMPSON, of Perth, Western Australia, where the accident had happened.

The subject of the case was a farm labourer, aged 19, who while ploughing, Sept. 26, 1857, fell, in consequence of the bullocks he was driving taking fright, and one of the animals sprang over him. "The next instant the plough (apparently the coulter) caught him in the throat and dragged him upwards of twenty yards before the animals could be restrained. On being taken up, the lower jaw was perceived to be nearly torn from the face, and otherwise very much injured. He opened his eyes about five minutes afterwards, and appeared quite sensible, and subsequently continued to be so.

"A lacerated wound extended from the right mastoid process across the throat to nearly the left angle of the jaw; this at its posterior origin had entirely divided the whole breadth of the sterno-mastoid muscle; from the right angle of the jaw to near the chin it divided the floor of the mouth. It was also met by an oblique laceration from the left commissure of the lips, which had quite torn through and divided the cheek.

"The inferior maxilla was fractured on both sides, on the right more than half way up the ramus; on the left obliquely from the last molar tooth to the angle of the ramus. The bone thus broken and torn out of the face was very much denuded of soft parts, and at each fractured extremity was, to some extent, laid bare of periosteum, particularly at the right. It was only attached at the chin in front, and to a small extent at the concavity behind. The mass thus produced by the bone, cheek, and chin, lay dangling towards the left shoulder, the whole presenting a most frightful aspect. The tongue was not at all injured. There was said to be much bleeding when the accident took place at 9 A. M., but little or none on admission about 2 P. M. Pulse weak.

"From the extent to which the broken maxilla was denuded of soft parts, it

was vain to attempt the replacing of the bone, and, accordingly, excision was proceeded with, which was easily accomplished by dissecting round the chin, and by a few strokes of the scalpel separating the attachments behind. A few vessels required ligatures. A piece of lint was laid along the cavity of the mouth, and the parts brought together by a few stitches where the cheek was divided from the angle of the mouth downwards. But as it was impossible, from the very rugged and torn state of the wound, for the gash across the neck to unite by first intention, it was only drawn slightly together and left to slough. The whole was now covered with lint, bandaged, and the patient removed to bed. He had some wine and water, which he managed to swallow with difficulty, and soon fell into a doze. Bowels were moved in the evening, but confined. To have wine and water *ad libitum*.

"27*th*. Has been rather restless during the night, but looks better than he did yesterday, and so far as he can be understood is free from pain. Has a great deal of thirst, although not so urgent as during the night. Slight appearance of discharge from the wounds, except across the neck, which is very black and dirty-looking. A gutta-percha splint was moulded and fitted on, in order to support the chin and other soft parts deprived of the support of the lower jaw. A good deal of the liquids he attempts to swallow escapes through the wound in the floor of the mouth at right side of tongue. Pulse 90, and of fair strength. *Vespere*.—Has slept a little. Right cheek beginning to swell; bowels not been moved. Pulse 93, same as before. Had to-day beef-tea, milk, ℥iv wine. To have, in the morning, ℥j ol. ricini.

"28*th*. Required drink from time to time during the first part of the night; remained pretty quiet from 3 A. M. Right cheek now swelled to a considerable extent so as to close the eye. Wounds discharging, especially from the cheek and cavity of the mouth, and have a good deal of fetor. Wound along the right side of neck has much the same appearance, and gapes greatly. Some union appears to be taking place in the wound running from the angle of the mouth and towards the left extremity of the laceration across the throat. The lint in the cavity of the mouth adhering too firmly for removal. Wounds syringed out with weak sol. sodæ chlor. Patient raises himself in bed with considerable freedom, and sits, while being dressed, with wonderful ease. Liquids put to the back of the tongue by means of a bent tube, and little or none escapes. Pulse 96, tolerably good strength. The medicine acting rather too briskly. To have pulv. opii gr. j; continue beef-tea, etc. etc. *Vespere*.—Bowels still acting from oil. Has taken some sago. Pulse 89.—℞ Tr. opii gtt. xxx, vin. ipecac. gtt. x, ft. haust.

"29*th*. Passed a good night; bowels acted slightly twice. Moves himself about with great alacrity. Wounds look, generally speaking, remarkably well. Swelling a little increased. Suffers little or no pain. Got some of the lint removed from the mouth, and syringed the wounds with sol. zinc. chlor.; fetor very strong. Neck dressed with lint wet with sol. sodæ chlor. *Vespere*.—Continues very well. Pulse 76. Same diet.

"From this time he continued to go on well, and the report of Nov. 3d is as follows:—

"There is still pus issuing from the small opening perpendicular with the fractured ramus, but to no considerable extent. He has the use of the muscles that were divided, though in some it is partial. The thickening of the cheek does not appear to reduce very rapidly, and it will doubtless remain in its present state for a considerable period. The right side of the face is very much paralyzed; the wrinkles of the forehead are entirely obliterated, exactly halfway across the brow. He cannot shut the right eye, neither has he the power of altogether closing the mouth; but the latter defect may arise to some extent from the thickening that exists at the right commissure of the lips.

"As he was anxious to leave the hospital, he was discharged. The man was seen two years afterwards, and at that time he was well and strong.

"Dr. Struthers exhibited the preparation of the separated bone. It embraced the entire horizontal portion of the jaw, and more than the half of the ramus of the right side. This ramus had been fractured obliquely backwards and downwards, from the root of the coronoid process to the middle of the posterior

edge. On the left side the fracture extended obliquely across the angle, from behind the socket of the second molar tooth to just in front of the posterior part of the angle of the jaw. The lines of fracture were rugged, but there was no splintering of the bone.

"Dr. Struthers remarked that he was not aware of any case in which so much of the lower jaw, or in which the entire horizontal portion, had been removed by the surgeon without a fatal result. In one case, first one side of the jaw had been removed (by Mr. Ferguson), and subsequently the other side (by Mr. Spence), but the symphysis had been left. Also one side of the bone, with the symphysis and fore part of the other side, had been removed; but a considerable part of the remaining ramus was left, which would assist materially in keeping up the tongue. In none of the few cases in which it had been tried had the operation of removal of the *whole* lower jaw been successful. A principal danger appeared to be the falling back of the tongue over the superior glottis, causing choking. This the operation of tracheotomy might obviate. As the symphysis is the great connection of the tongue, the part to which it is fixed up by the genio-hyoid and genio-hyo-glossi muscles, the removal of this, together with both sides of the jaw, inevitably loosens the tongue, and leaves it constantly in danger of falling down, until new adhesions are acquired. But if the sides of the jaw are left, or one of the sides, the connection of the tongue thereto through the mucous membrane would assist in keeping the tongue forward. In this case, however, it is remarkable that the symphysis and both sides had been torn off, and yet, although no surgical assistance was at hand, choking had not taken place. And the case would seem to show that, after all, it is possible to remove the whole of the horizontal portion of the jaw (and it might be the entire bone) with a successful result.

"The lacerated nature of the wound had prevented hemorrhage in this case; but there must have been as much shock from this severe accident as from the ordinary operation of removing the entire jaw.

"Dr. Watson had heard of a case in which the whole lower jaw had been removed, and where the individual recovered. He remembered an American case in which there was necrosis of the whole base of the lower jaw, and where the operator removed not only the dead but the substitute bone, including the condyles, and where the patient had recovered. He had himself assisted Mr. Syme in an operation where he successfully removed one ramus and the whole of the symphysis, and where, of course, the attachments of the tongue were cut through. No doubt there was at first a tendency to retraction of the tongue, but if it were held forward for a few moments this tendency disappeared, and there was no subsequent danger of choking."—*Edinburgh Med. Journ.*, Dec. 1861.

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36. *Reunion of Severed Fingers.*—EDWARD DANIELL, Esq., records (*British Med. Journ.*, Jan. 11, 1862) the following interesting cases illustrative of the ready union of severed fingers when cut off by clean and sharp instruments:—

"A young man named Edmund Bedford, an apprentice to a wheelwright in this town, severed the end of his thumb by a sharp blow of a hatchet. He ran off immediately to me, accompanied by his fellow-apprentice. The cut was not lacerated in the least; it was a clean cut, and admirably adapted for grafting; but the end of the thumb was in the sawpit. I despatched the youth who accompanied the patient to look for it; he returned very soon with the absent portion carefully wrapped in paper, but invested in sawdust. When this was removed, I fitted the part accurately on the wound, and placed a strip of lint two-thirds down the thumb, carrying it over its loose end to the same distance on the opposite side; round this I wound a longer strip of lint, and finally secured it with strapping. To make it still safer, I covered it over with what is called a thumb-stall. At the end of ten days perfect union had taken place; and at this time the thumb is as good as ever.

"A labourer of the name of Pell, from a neighbouring village about three miles from my residence, cut off three fingers by a chaff-machine. He came hastily into the surgery, threw down his fingers on the table, and exclaimed: 'I need not tell you what's the matter with me, sir.' 'No; but I am glad you

brought your fingers with you, for I shall put them on again.' The man objected much to this, and for some time obstinately refused to submit to such 'foolish nonsense;' however, I succeeded in carrying my point, and the severed fingers were replaced on the wounds. The result was satisfactory; perfect union was established.

"About three weeks since, William Clare, of this town, publican, came to my surgery, having severed the ring finger of the left hand by a chaff-machine, immediately below the nail, cutting through the phalanx. He was followed by his son, who had discovered the finger amongst the chaff. I carefully replaced it, and treated it in the same way as the preceding cases. At the end of ten days, union was perfect. The nail sloughed off, and a new one is rapidly forming.

"I record these few cases out of many, to show what may be done by the plastic principle of adhesive inflammation even in the restoration of parts which have been separated from the living body, and usually regarded as incapable of reanimation; and also to press upon my brethren never to lose sight of the chance of trying the effects of human grafting, especially in joints like the fingers, where the measure of vital energy required for reanimation is so small.

"For my own part, I have not had a single instance of failure in a somewhat extended practice, when I have had to deal with these kind of amputations occurring in the first or second phalanx."

37. *Spontaneous Dislocation of the Femur.*—In bringing this subject before the Vienna Medical Society, Dr. Dittl adverted to the differences which existed between traumatic and spontaneous luxation. In the former, the result of great violence to a healthy subject, the *ligamentum teres* and the capsule are always torn, the head of the bone lying external to the ruptured capsule. According to the author's numerous experiments and his examination of specimens, this laceration of the capsule does not take place as a mere slit, it always becoming at the same time partially separated from its insertion in the edge of the acetabulum, forming a triangular flap, which by interposition may render reduction difficult. Spontaneous luxation, on the other hand, is always the consequence of a disease, and occurs through mere muscular action, unaccompanied by external violence. Any disease, as soft enchondroma, gelatinous cancer, etc., but most commonly inflammation, which leads to a loosening of the texture of the surrounding tissues, may give rise to the displacement. These being soaked in exsudative matters, the cartilage softens, so that a plate of it and the ligamentum teres may be defibrinated by means of a forcep. The capsule becoming swollen, passively yielding, and distended like a bladder. The patient usually remains upon his back, with the hip-joint bent, the head of the bone pressing upon the posterior edge of the acetabulum, in which direction it is also forced by the muscles acting through reflected contraction. For this reason the edge of the acetabulum and the corresponding portion of the head of the bone undergo diminution, and the occurrence of luxation is favoured; and, if arrest of the disease could now be obtained, the head of the bone would no longer enter the cavity completely. Contrary to what takes place in traumatic luxation, the ligamentum teres in this form of dislocation is not necessarily torn, and the capsule is uninjured and still retains the head within its cavity.

For the prognosis, the determination of the stage of the disease at which the luxation takes place is of great importance. At an early period, reposition is more difficult, but the result is more durable; while later, the head is easily replaced and easily resumes its abnormal position. In caries no attempt at replacement should be made. Reposition is contraindicated when the muscles have become firmly contracted, owing to the position they have retained, when abundant osteophites have become developed and when inflammatory action is still present. Dr. Dittl thinks that direct extension should not be employed for the purpose of obtaining reposition; and, in the two cases which came under his own care, applying the hand to the knee, he bent the limb strongly forward, loosening the head of the bone from its adhesions by movements of abduction and adduction, and rotating it outwards during abduction. The after-treatment is of the highest consequence, as, if neglected, relapse may easily occur. It consists in keeping the thigh, by means of bandages, extended and rotated out-

wards for one or two months. Some amount of shortening will remain after recovery, as also some eversion of the foot. In one of the author's cases, reduction took place five months after the occurrence of the luxation, and six months later the patient was able to get about unassisted. In the other case six months had elapsed before reduction was effected. Passive movements of the limb executed four weeks afterwards, re-excited inflammatory action, which, however, was soon abated. The reduction should be accomplished under the influence of chloroform, in consequence of the active contraction of the muscles attempts at effecting it excite. Dr. Salzer, founding his remarks on a case which occurred in Heyfelder's practice, disagreed with the author in thinking it necessary to await the subsidence of inflammation before proceeding to reduction; on the contrary, this should be effected as soon after the occurrence of the luxation as possible, as delay renders it difficult or impossible, while after its completion the inflammation subsides. The subject of the case alluded to was a medical practitioner, who was able to leave his bed four weeks after the reduction, and is now in the active pursuit of his profession.—*Med. Times and Gaz.*, Jan. 11, 1862, from *Wochenblatt der Gesell. der Aerzte in Wien*, No. 26.

38. *On the Treatment of Aneurism of the Extremities by Flexion of the Limb.*—Mr. ERNEST HART, in a paper read before the Royal Medical and Chirurgical Society, in April, 1859 (see number of this Journal for July, 1859, p. 242), brought to the notice of the society a case of popliteal aneurism, which he had successfully treated by flexion of the leg in 1858. Mr. A. Shaw kindly communicated at the same time a second case, which he had subsequently successfully treated by that method. Mr. Hart wished to ask the attention of the society to some further cases treated with success on this plan since the above were made public through the medium of the *Transactions*. They were all cases of aneurism of the extremities—for the most part popliteal. Indeed, by the nature of this method of treatment, its application was confined to the extremities; for here the general law of position of the great arteries to some extent favoured it. The author remarked that the effect of forcible flexion of the healthy arm or leg might be observed in the considerable retardation of the blood flowing through the main artery, and the almost entire extinction of its pulse. The application of this principle to the extreme flexion of the arterial trunks was obvious. Their structure favoured the effect described. Probably, also, the projecting bellies of the contracted muscles might cause some pressure on an artery which lay in contact with them; and in the case of an aneurismal swelling some direct pressure might be made upon the tumour; but of the occurrence of this circumstance, or of its desirability, the author was doubtful. It was now pretty clearly established and generally accepted, that the object in treating aneurism was not to cut off the supply of blood, or altogether at once to arrest circulation in it, but to cause such a retardation of the current as would lead to the gradual deposit of fibrinous laminæ in the interior, and so effect its gradual consolidation. The former method was uncertain and dangerous; the latter safe and permanent in its results. In the case in which the author first applied the method of flexion to the treatment of popliteal aneurism, and in that in which Mr. Shaw subsequently tested it, they were completely successful in obtaining the latter result. Mr. Hart had met with similar success in the following case:—

CASE 3. In September, 1860, a healthy and robust looking man, aged thirty-five, was sent to him by Mr. Bridge, for treatment of a popliteal aneurism of the left leg. It was of the size and shape of a large lemon, projecting on the inner side of the ham. It had a loud bruit and very perceptible thrill, but was not entirely reducible. The skin was somewhat discoloured over the tumour, as though from a recent bruise. The patient had noticed the existence of this pulsating tumour for nearly two years. It had increased somewhat in size during the first nine months that he had observed it, and he had several times thought of seeking advice, but as he had felt little pain from the disease, he had neglected its cure. About three weeks before the author saw him, he had received a blow in the region of the tumour, and since then he had suffered pain in it, and the swelling had increased. The arteries of the leg pulsated distinctly, and there was no very marked dilatation of the veins below the knee. There

was no history of gout or syphilis. A week was allowed to elapse before commencing any treatment. The discolouration of the skin was then no longer visible, and the aneurism was pulsating distinctly as before. Mr. Hart desired in this case to separate the effect of treatment by flexion as clearly as he could from any collateral or adjuvant agencies. He did not, therefore, employ any form of medical treatment whatever, nor did he invalid the patient by enjoining the horizontal position and confinement to bed. He rolled the leg in a flannel bandage from the foot upwards, stopping below the tumour so as not to compress this in any way. He then bent the leg on the thigh, and retained it in the flexed position by means of three pieces of bandage attached to the ankle and along the leg. The patient was allowed to rise and go about the room by the help of a crutch. The forced flexion of the leg entirely arrested the pulsation of the tumour. Complete flexion caused, however, an inconvenient degree of pain, and after eight hours he relaxed the bandages so as to leave the leg in a semi-flexed position. At night he ordered one grain of solid opium. The patient slept well. Next morning the tumour still pulsated distinctly. He again completely flexed the limb, and during the next two days it was retained in that position, being unmoved during the night. The patient moved about freely the whole time by the help of a crutch and stick, and occasionally of a wooden pin leg roughly adjusted below the bent knee. He occupied himself in reading, writing, and smoking. He complained of pains in the knee-cap, but after the first night he slept moderately well without opium. On the fourth day Mr. Hart somewhat relaxed the bandages and examined the tumour. He had the satisfaction to find that it was as nearly as possible solidified; a faint thrill, however, could be detected by placing the hand on the tumour. He again replaced the leg in the position of forcible flexion, and retained it so until the end of the sixth day. He could not then find on examination any trace of pulsation or thrill. The articular arteries beat perceptibly, and he concluded that the collateral circulation was satisfactorily established, and the aneurism consolidated by the deposition of laminated clots. As a desirable measure of precaution, he retained the leg in the semi-flexed position for another week—a proceeding to which the patient, who fully understood the nature and object of the treatment, offered no objection. The subsequent progress of the case was in every way satisfactory; it offered no peculiarity worthy of note. It was three weeks from the conclusion of the treatment before the patient ceased to limp from the stiffness of the knee, caused by its confinement. It seemed to the author that this case sufficiently established the simplicity and efficiency of the treatment of popliteal aneurism by flexion in certain cases. Here he was enabled to effect a cure practically in six days without the use of any apparatus, without the intervention of any watchers or assistants, without risk or danger. This patient had been cured of popliteal aneurism—a disease formerly so formidable—without being confined for a day to bed. In order to afford the grounds of a judgment on the relative merits of the flexion treatment, it might be proper to add a brief *résumé* of the cases which had been successfully treated by other surgeons in this country who had employed the method since the author had the honour to introduce it to the notice of the society. Some of these cases had been treated by flexion solely; in others that method had been conjoined to the treatment by compression.

Case 4. *Popliteal Aneurism—Recurrence after ligature of superficial Aneurism—Treatment by compression unsuccessful—Cure by flexion of the leg.*—By James Spence, F.R.C.S.E. T. H., a coal-carter, was admitted into the Royal Infirmary, Edinburgh, under the care of Mr. Spence, in August, 1858, with a pulsating aneurismal tumour, of the size of an orange. The superficial femoral had already previously been tied in May, 1857, with the effect of producing solidification of the tumour. But the pulsation recurred a few days before this second admission, and the tumour was then as large and pulsating as violently as before the artery was tied. Compression was carefully employed over a period of upwards of five months, but the tumour was at the end of that time increasing instead of diminishing. The patient left the house for some weeks, but returned, desiring to submit to any operation that might be thought necessary. The following is the sequel of this very interesting case in the words of the surgeon: "On examining the aneurism at this time, its condition was as follows:

It was the size of a pretty large orange, and pulsating strongly; the femoral artery could be felt to pulsate for about four inches below Poupart's ligament, ceasing to beat for about an inch or less above the point where the superficial femoral had been tied. Pressure on the common femoral completely and readily arrested pulsation in the sac. Compression of the superficial femoral above the point tied also did so, but required very firm pressure to be made directly backwards. Compression along the course of the superficial femoral below the point tied produced no effect until it was made over the lowest part of Hunter's canal, when the pulsation of the aneurism became thoroughly commanded by it. Under these circumstances, after weighing the comparative chances of success between ligature of the external iliac, or the lower part of the superficial femoral, the latter plan was decided on, and the patient willingly gave his consent. But as the case did not seem a very hopeful one, it was thought as well to try the plan of flexion of the leg upon the thigh recently proposed. On bending the limb fully, all pulsation was at once and completely arrested, and the limb was bandaged in that position. But the patient could not bear such flexion to be kept up. Accordingly, a slipper, with a slip of bandage sewed to the heel, was fastened to the foot, and the slip of bandage was then fastened to a loop connected with a broad bandage round his pelvis, and this gradually tightened, so as to increase daily the flexion of the leg on the thigh. This treatment was commenced on May 20, 1859. On the 23d, the pulsations were weaker, but returned when flexion of the limb was discontinued. On the 27th, the pulsation diminished; tumour smaller and firmer. There was still a tendency to increase of pulsation when the limb was allowed to remain straight for any length of time. On June 6, the pulsation was scarcely to be felt in the aneurism, even when flexion was discontinued. The tumour felt solid and smaller, and enlarged anastomosing vessels could be felt over it and around the knee. The patient was now allowed to walk about with crutches, the affected limb being suspended in a flexed position. When in bed or sitting in the ward, he was desired to extend the leg occasionally, and not to keep it constantly bent. On June 20, there was not the slightest pulsation to be felt in the aneurism, which was firm and considerably diminished in bulk. Several very large anastomosing vessels could be felt over the tumour, the limb was of good heat, and there was no stiffness of the knee-joint. I kept the patient for about three weeks longer in the Hospital under observation, and he was dismissed cured. Since then he has returned to his usual occupation of coal carter, which requires him to walk considerable distances, but when I last saw him there was no tendency to return of the disease."

CASE 5. *Aneurism of the Popliteal Artery successfully treated by Flexion combined with Pressure.* By OLIVER PEMBERTON, Surgeon to the General Hospital, Birmingham.

CASE 6. *Traumatic Aneurism of the Radial Artery successfully treated by Flexion and Compression.* By R. M. CRAVEN, Hull.

CASE 7. *Aneurism of the left Popliteal Artery, cured in sixty-eight hours by the combination of Flexion and Compression.* By LEITH ADAMS, M.B., Surgeon to the 22d Regiment.

CASE 8. *Popliteal Aneurism—Compression—Great increase of Tumour—Flexion of Limb—Cure.* By WILLIAM COLLES, F.R.C.S., Surgeon to Steevens' Hospital, Dublin.

CASE 9. *Popliteal Aneurism cured by Forcible Flexion.* By AUGUSTIN PRICHARD, Surgeon, Bristol.

The author was not unaware that the flexion treatment had not always been successful. In cases under the care of Mr. Paget, Mr. C. H. Moore, and Mr. Birkett respectively it had been employed, and disused as ineffective. The first two were, however, cases in which the contents of the aneurismal sac had escaped by rupture or ulceration. These are severe forms of the disease in which extreme treatment is always likely to be required. In all three compression also failed, and ligature was resorted to. In the hands of other surgeons the method had been found painful, and apparently abandoned on that account. On this head he would only remark that other methods of treating aneurism are commonly both more painful and tedious, as well as attended with greater risk. The first results of any method of treatment are likely to be, as they always have

been, less perfect and less uniformly successful than those which follow upon a larger experience and a more assured application. It is probable that attention to certain points of detail may tend to prevent pain and inconvenience. By carefully bandaging the limb, support is given to the superficial veins and rest to the contracted muscles. Friction of the limb upwards may serve the same purpose. Inunction of the knee-cap with oil and chloroform diminishes the sensation of stiffness, and relieves pain. By allowing the patient to rise from his bed and dress himself, much of the tedium is obviated, and coagulation of the fibrin aided. Sleep follows much earlier at night. Any favourite habit, such as smoking, may be usefully permitted, with the same object. It is desirable to bespeak the assistance of the patient himself, by explaining the nature of the malady and treatment. Flexion should be employed with care, and graduated. The author's reason for referring to these minutiæ might be found in the past history of this method, and of the cognate treatment by compression, in which attention to minute details had been shown to produce a remarkable increase in the success obtained. For success a watchful and intelligent interest was necessary. In reviewing the cases already successfully treated by flexion, it seemed to the author that there were many elements for a favourable judgment. Compared with compression, it had the advantage of not requiring the constant and watchful attention essential to the success of that method. No instruments were employed, and no assistants were needed. There was no risk of ulceration of the skin, of erysipelas, or of that other rare effect described by Mr. Oliver Pemberton—the production of aneurismal varix at the site of pressure. If not ultimately successful, it would still have had the effect of beneficially developing the collateral circulation. Of course, where practicable, it would always be preferred to the use of the knife. The interesting case of recurring popliteal aneurism under the care of Mr. Spence, affords an instance in which flexion effected a cure where the superficial femoral artery had already been tied, and compression during five months had failed; the undesirable alternatives being the ligature of the femoral close to the sac or the external iliac, under unfavourable circumstances. Mr. Spence states: "From what I saw of the plan of flexion of the limb in this case, I would have great hopes of its success as a curative measure, far simpler and more efficacious than any form of compression I have seen employed, devoid of all its risks, and not interfering with, but rather beneficial as a preparation for, ligature of the artery, should it fail in itself accomplishing the cure."

The cases related show that flexion may be satisfactorily employed as aiding compression where this is desired. Finally, Mr. Hart said that he did not now seek to define the position of the flexion treatment in relation to aneurism, or to establish arbitrarily its superiority to other methods. He desired to leave this matter to the judgment and further experience of the surgical profession. His object in this communication had been to submit to this society the further facts which had come to his knowledge since he had the honour first to bring the treatment to their notice, and which furnish the grounds for a more complete judgment of its merits and deficiencies.—*Med. Times and Gaz.*, Feb. 8, 1862.

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39. *Return of Pulsations in Aneurisms after the Ligature.*—During a discussion on aneurism at the Society of Surgery, M. Broca observed that the return of pulsation may depend upon three different causes: the persistence of the pulsations, return of the pulsations, and relapse of the aneurism. In the first of these cases it is due to the presence of a somewhat large collateral vessel very near the aneurismal sac. The pulsation soon appears, but the cure of the disease is not prevented. In the second case, when the pulsations return, the sac is suddenly filled with coagula which have not had time to become organized, and these "passive" coagula are gradually dissolved, the arterial pulsations then reappearing. They appear soon after the operation, and may persist for one, two, three months or more. At last, these first coagula are replaced by "active" coagula, and a cure is produced in almost all cases. When relapse is to happen, the pulsations do not reappear as soon as in the preceding case, not occurring until one, two, or six months, or even from one to three years, after the ligature. At one of these remote periods the blood has made a passage into the sac, and hav-

ing hollowed out a more or less spacious cavity, the tumour takes on again the characters of an aneurism. Under all the above circumstances, more or less circumscribed pulsations are perceived in an aneurism for which an operation has been performed, but the prognosis is very different. In the first two cases no surgical treatment is called for, while that of relapse is a very serious one.

M. Broca gave an account of the various cases he had collected exemplifying these occurrences. These do not comprise mere persistence of the pulsations after the application of the ligature, as owing to the circulation being rendered slower the deposition of fibrin goes on gradually and regularly until a cure is accomplished. They relate only to the cases in which the aneurismal tumour, after having been filled with coagula, at the end of a certain time again becomes permeable; and these, as stated above, may consist of instances of *return of pulsation* and *relapse properly so called*. Cases of return of the pulsation are distinguished from those of relapse by the fact that the tumour makes no progress; its pulsations, always more feeble than before the ligature, acquiring their maximum of intensity in a few hours, and then diminishing in force. Of 26 cases collected from various sources by M. Broca, 13 were aneurisms treated by ligature of the femoral, 4 of the external iliac, 6 of the primary carotid, 1 of the subclavian, and 2 of the radial. In 5 of the cases the pulsations reappeared before the end of the first day, eight times from the third to the seventh day, four times from the eighth to the fifteenth day, once on the nineteenth day, and once at the end of the seventh week, in this case only continuing during one day. None of these patients became the subjects of gangrene. One died from phlebitis, the ligature having perforated the femoral vein, and another in consequence of secondary hemorrhage from the wound made for the ligature. All the other 24 cases survived, and all were radically cured with the exception of two, which went on to true relapse. Of *relapse*, properly so called, he has collected 22 examples, this manifesting itself in 7 towards the end of the first month, and in 13 after the end of the sixth month, the epoch not being exactly indicated in the two others. It is remarkable that in none of the cases completely known has the relapse occurred between the first and the sixth month. All the relapses occurring after the end of the sixth month, related to aneurisms of the lower extremity. Six relapses occurred between six months and a year, 2 at the end of a year, 1 at the end of two years, 1 at the end of four years, 1 at the end of 7 years, and 1 at the end of fifteen years. This class of cases is far more serious than the former; for although in three instances the aneurisms were cured spontaneously or by means of slight treatment, and in two others they remained stationary for a long time, in all the rest their progress was much more alarming.—*Ibid.*, from *Gazette des Hôpitaux*, 1861.

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40. *Radical Cure of Varicose Veins of the Leg.*—Mr. JOLLIFFE TUFNELL related to the surgical society of Ireland (Dec. 14, 1861) the details of a case of varix of the saphena vein upon which he had lately operated in the manner recommended by Mr. Wood of King's College, London, and with the pins introduced by him for this purpose. The termination of this case was successful, but the amount of inflammatory action produced was such as to render the proceeding hazardous, and its progress one of anxiety for many days.

Professor HARGRAVE stated that he had for many years looked upon operations on the saphena vein as most questionable. It was ascertained that the operative interference did not lead to a permanent cure. It might, and did heal for a time, but the disease afterwards returns. Many years ago, so far back as the time of the old Meath Hospital, he directed his attention to the operative surgery of the veins, and recollected that Mr. Hewson, an excellent practical surgeon, was most unwilling to introduce it into this country. He believed Sir B. Brodie recommended a subcutaneous division of the veins by means of a very simple convex knife. Two or three of the operations performed by Mr. Hewson were successful, but in three or four other cases diffuse inflammation of the vein set in, and the patient sunk under it. The result produced an impression on his mind that had never left it, and with regard to varicose veins, he would much rather "bear the ills he had than fly to others he knew not of." As to the case which had been so well brought forward by Mr. Tufnell, the man was

for some days in a very perilous position. He never saw a man before in a more intense rigor. He believed he was the first to recommend for varices a garter made of India-rubber, and had seen it most successful in the case of females suffering from varicose veins. The veins became perfectly healthy.

Dr. Beatty would not have risen were it not that he was desirous of bearing his testimony to the efficacy of the garter recommended by Professor Hargrave many years ago. It consisted of a strong band of vulcanized India-rubber an inch broad. It was pulled on over the feet, and made so tight as to cause a firm pressure on the veins. He had many opportunities of seeing it used by females suffering from varicose veins, and in every case with the most perfect success. He had seen it worn both above and below the knee. With reference to the operation of Sir B. Brodie, he had seen it performed in two cases by the late Mr. Carmichael in the Richmond Hospital, and both patients died.—*Dublin Medical Press*, Jan. 1, 1862.

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41. *Vascular Tumours in the Female.*—Mr. Holmes Coote states (*Lancet*, Dec. 28th, 1861) that he has met with cases of vascular nævi in the female, which enlarge at every menstrual period, and undergo during the period of pregnancy a permanent increase in size, attended with heat and throbbing—symptoms which slowly subside after delivery. In 1859 Mr. C. saw a young lady, aged twenty-two, in whom one of these vascular growths occupied the palmar aspect of the ring finger of the left hand. It enlarged at the usual monthly period, the swelling being the greater if menstruation was delayed. She wished to undergo some operation for its removal—a proceeding of which Mr. C. disapproved, feeling that there was danger of inflammation attending any operation, however carefully conducted, and that there was a reasonable probability that the nævus would ultimately disappear. This lady has since married. During pregnancy the enlargement of the nævus is remarkable, but it completely subsides after delivery, and with her second child it constituted one of the early symptoms of impregnation. Mr. C. has since seen a second similar case in private practice, and a third case amongst his out-patients at St. Bartholomew's Hospital.

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42. *Spina Bifida successfully treated by Injection of Iodine.*—In February, 1859, Dr. Lézerie was called to see Marie B., an infant aged nine and a half months, who had in the lumbar region a tumour as large as a moderate sized orange; it presented all the signs of spina bifida. The parents said that it had emptied itself spontaneously twice since birth by external aperture, and that it had rapidly refilled. There was complete paralysis of the lower limbs, partial paralysis of the upper limbs; the head could be moved easily; and there was no hydrocephalus. The parents were anxious for an operation, which was accordingly performed by M. Lézerie, after clearly setting forth its dangers and uncertainty of success. On March 12th, pressure being made at the upper part of the tumour to prevent, if possible, communication with the spinal canal, the fluid contents were partially evacuated, and a nearly corresponding quantity of a mixture of equal parts of tincture of iodine and water was thrown in. This was held in for two minutes, when some was allowed to escape. Another injection was then made in like manner. On the fifteenth day after the operation, the motions of the upper limbs were more free, and the child could support herself on the legs, but could not move them. In a month, the improvement in the arms continued, and the lower limbs could be moved a little. In four months, the paralysis had almost completely disappeared; and, in six months after the operation, the child could walk alone. During the progress of the case, compresses dipped in an iodine solution were kept constantly applied over the tumour. Twenty-seven months after the operation, the tumour was reduced to the size of a walnut; the child was well developed and very lively, and could run easily. The only remaining trace of her former condition was incontinence of urine.—*Moniteur des Sciences Méd.*, Oct. 8, 1861.

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43. *Cystotomy without a Stone.*—Mr. T. Paget, of Leicester, candidly reports the following instructive case in which he opened the bladder for stone, deceived by symptoms simulating those of calculus.

The case was received in the Leicester Infirmary by Mr. Marriott, the house-surgeon, and entered as, "September 24, James Branson, aged three years eight months; symptoms of stone. Examined twice by Mr. Marriott, and stone found the second time." Not, however, as he told me when reporting the case, with sufficient distinctness to settle his mind for an operation.

The history given by the father and the woman who had had care of the child since its mother's death, two years ago, was that it had violent pain in micturition, losing much rest by frequent calls, attended by sudden stoppages of the stream and the making of a larger quantity immediately after, violent squealing, pulling of the parts, and forcing of feces. Around the anus were several livid lumps of hemorrhoids. There had been no hæmaturia. It was reported that no urine ever passed except while in a sitting posture. The child was healthy looking.

Sept. 26. The child having been prepared for the operation by having had the bowels emptied yesterday and an opiate enema this morning, the sound was introduced, and an indication of stone immediately given; but the click, though audible, was not sufficiently clear to encourage an incision.

After repeated attempts, the sound was producible at will; but did not impress all equally as being the click of an uncovered stone. Mr. Benfield and Mr. Marriott thought it certainly not sufficiently clear; Mr. Brown of Wymeswold was more satisfied; none of us, I believe, were free from doubt.

In this dilemma, I was influenced by the character and intensity of the symptoms, the hopefulness of permanent good if there were a stone, the rare occurrence of death with us after lithotomy, especially in children, and with Allarton's operation; and, after much hesitation, I decided upon opening the bladder at the risk, as I thought, of finding a stone impacted in the end of the ureter, and not being able to remove it.

I chose Allarton's operation, introducing a director along the groove of the staff, and using my little finger between the two as a dilator. In this way, the dilatation was readily effected; the finger entered the bladder, and the staff was removed. A nasal forceps was then passed over the director, but no stone could be found. Frequent attempts with various forceps were made; and once, when passing a large pair in the hope of stretching open the ureter and dislodging a calculus from its end, I found that the lax cellular membrane between the rectum and bladder had given way, and the forceps were admitted into the recto-vesical pouch. This, however, was soon perceived, and the forceps were passed into the bladder.

The movements of the forceps imparted a feeling of slight grating, or rather vibration; but no click could be heard, and the grating was only that often produced by steel instruments rubbing over cut muscular fibres.

The examination and operation occupied a long time; but the least possible effect of chloroform was maintained, sufficient to keep down manifestation of pain. Very little blood was lost.

6 P. M. He had slept nearly continuously, but had spoken rationally. Urine passed by the wound freely, and only slightly tinged.

10 P. M. The urine was untinged. He had vomited once or twice.

27*th*. 9 A. M. He was perfectly conscious, and winced at pressure on the hypogastrium. Pulse rapid and small.

11. A. M. There was still considerable stupor, and he had again vomited. He winced still. Pulse rapid; skin hot; urine abundant and untinged. Foveatur abdomen.

7 P. M. He was suddenly convulsed, both arms especially; the thumbs were turned into the palms; the fingers tightly clenched; the pupils dilated to the utmost, and unmoved by the strongest light. Three grains of calomel were ordered to be taken immediately, and four leeches to be applied to the hypogastric region.

28*th*. 9 A. M. He became partially conscious between 3 and 6 A. M.; but soon relapsed, and was now profoundly comatose; pupils dilated. He indicated pain when pressed on the hypogastrium; otherwise he was unconscious.

Post-mortem examination, next day at 10 A. M. The kidneys, ureters, bladder, and urethra, as far as occupied by the incision, after full examination *in situ*,

were removed. There was no stone or calcareous matter in any part. Both ureters were tortuous in their course, and greatly dilated, so that the little finger passed down them with ease; the dilatation was most at their lower ends, the left forming a complete pouch nearly as large as a pigeon's egg. Beneath and around this a puriform fluid appeared, and extended downwards into the recto-vesical pouch, into which the finger readily passed from the wound. The mucous membrane of the bladder was injected posteriorly, and ecchymosis occupied small patches here and there. The sphincter was not lacerated; the urethra, where incised, showed slight ecchymosis; the edges of the incision were turgid and lymphy; the *trigone* of the bladder was of an ashy gray. There was a blush of peritonitis in the pelvic cavity. After removing the bladder, etc., the sound was passed with the integuments of the abdomen closed, and the muffled click was heard again, though less distinctly. On opening the pelvis again, this was found to arise from the point of the sound impinging upon the iliac portion of the brim of the pelvis, the edge of which was unusually thin and sharp. Perhaps, here is an explanation of the click and feeling imparted to the instrument before operation. The instrument used in this case was a common steel sound, having at the hand end a socket, into which is tightly fixed a peg and a disk of wood; the latter six inches in diameter and one-tenth of an inch in thickness. The disk acts as a magnifier to all sounds heard, and is an useful addition to the instrument where it is desirable that a number of surgeons shall be satisfied of the presence of a stone.

On opening the head, the brain was found in a remarkably soft state. Both cerebral hemispheres and the cerebellum were so extensively if not uniformly marked by this softness, as to lead to the conclusion that such was the native condition of the child's encephalon; and we learn from the father, since its death, that he has lost his wife and five children; one of the latter "with water on the brain," another "by sudden convulsions which took him off in five minutes while suffering from swelled purse." Though the consideration of this case, therefore, would *primâ facie* drive one to the determination not to operate in any case unless the clearest and sharpest click were given from the examining instrument, it is nearly certain that the opening of the bladder is not to be accredited as the main cause of death in this case; for the peritonitis was neither intense nor widely spread, nor, during life, more marked than I have seen it in cases that have been freed from it and going on well in a few days; and that in whatever degree the peritonitis may be thought to have been tributary, the main cause lay in the excitability of a sensorium imperfectly constituted, and unable to bear the shock of the lengthened examination, operation, and chloroform action. I regret, however, now that, in ignorance of the peculiarity of the family history, I did not avail myself of a suggestion made by Mr. Benfield to postpone the operation for a few days.

But if the explanation I have suggested of the sound which was heard by all, though not conclusively for operation, were the right one, the symptoms still remain as a mystery. We occasionally find cases of great pain and frequent micturition of small quantities, and which are attributable to irritable bladder or acrid urine; but these symptoms are usually accompanied by mucous or muco-purulent deposit, which we had not; and never, as far as I know, by sudden stoppage of the stream followed by the passing of a larger quantity immediately after. How far we may accept the explanation ingeniously offered by Mr. Charles W. Wood of Woodhouse Eaves in this country, at the *post-mortem* examination, I leave others to decide. He takes the very dilated state and pouchy form of the ureters as the cause of their more than usually oblique and valvular entrance into the bladder, and of a difficult, intermitting, and painful evacuation of their contents into it, the pain being transferred along the canal to the usual site at the glans penis. Certainly, the immense size and irregular form of these conduits were very striking.—*British Med. Journal*, Dec. 14, 1861.

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44. *Strictured Urethra showing the Results of Forcible Dilatation after Death.*—Mr. Bernard Holt exhibited to the pathological society a specimen of this. The patient, who was known to be suffering from severe stricture of the urethra, died in the Westminster Hospital of fever, and the opportunity

was taken to introduce Mr. Holt's "stricture dilator," post-mortem, and to slit the stricture precisely as would be done in the living body, with the view of examining the effects produced by the operation. The urethra having been carefully removed and opened, showed a longitudinal rent in the mucous membrane and submucous tissue of the floor of the urethra corresponding to the situation of the two strictures which had existed, but the vascular tissue of the corpus spongiosum was uninjured. Mr. Holt remarked that the appearance corresponded exactly to those he had always imagined, but he had not had an opportunity of ascertaining, owing to the uniformly favourable result of the operation.

Mr. Henry Thompson said he had had the opportunity of closely examining the specimen, and of witnessing the performance of the operation in several cases certainly with the best results; but he still doubted whether the stricture was really torn, and thought that it was rather the healthy tissue which gave way.

Mr. Holt replied that as the calibre of the urethra was restored in all cases, he presumed that the stricture was split, and as Mr. Thompson himself said that the stricture was commonly at the lower part of the urethra, he considered it highly satisfactory that the rents should be found in that situation in the specimen.

In answer to Mr. Hutchinson, Mr. Holt said that his patients had never suffered from abscess in the perineum.—*Med. Times and Gaz.*, Dec. 14th, 1861.

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45. *Treatment of Large Ovarian Cysts and Tumours.*—Dr. T. SPENCER WELLS, in his address before the meeting of the British Medical Association in July last, gives the following conclusions as the result of his extensive experience:—

"I. So long as an ovarian tumour does not materially interfere with the appearance, prospects, or comfort of a patient—so long as no injurious pressure is exercised by it on the organs of the pelvis, abdomen, or chest—so long as heart and lungs, digestive organs, kidneys, bladder, and rectum perform their functions without much disturbance—so long as there is no great emaciation, no very wearying pain, no distressing difficulty in locomotion—or so long as any such injurious influence can be counteracted by ordinary medical care—the patient *should be left* to that *care, undisturbed by any surgical treatment.* But,

"II. As all specific medical treatment—by iodine, or bromine, or mercury, or lime, or potass, or by diuretics or other medicines used with a hope of checking the growth of ovarian cysts and tumours, or of leading to the absorption of the fluid they contain—has been proved by ample experience to be absolutely worthless, no medical treatment should be adopted which can possibly injure the general health of a patient, or place her in a less favourable position than she otherwise would be for such surgical treatment as may ultimately be called for.

"III. When an ovarian tumour deforms a patient, or materially impedes locomotion, or interferes with the free action of heart or lungs, or obstructs the circulation through the large veins in the abdomen, or causes more or less constant and distressing pain, loss of rest, or emaciation, or leads to derangement of the digestive organs, or makes injurious pressure on the contents of the pelvis, surgical aid is required.

"IV. When surgical aid is required, we must be guided by the nature and connections of the tumour in our selection of one or other of the following methods:—

"Simple tapping through the abdominal wall.

"Simple tapping through the vagina.

"Simple tapping through the rectum.

"Tapping followed by pressure.

"Tapping and the formation of a permanent subcutaneous opening in the cyst-wall.

"Tapping and the formation of a permanent opening through the skin, vagina, or rectum.

"Incision.

"Tapping followed by injection of iodine.

"Ovariotomy."—*British Med. Journ.*, Dec. 21, 1861.

46. *Radical Cure of Ovarian Disease.*—Mr. T. Spencer Wells gives the following as the result of his own personal experience in the radical cure of ovarian disease:—

"*a.* Two patients have been radically cured by simple tapping.

b. Of five patients injected with iodine, three[1] have remained without refilling for more than two years, and still remain well. In the fourth, secondary cysts have since grown to a large size, and ovariotomy (which might have been performed before the injection) now appears too hazardous to recommend. In the fifth case, the cyst has refilled after two injections; but the patient will try it a third time, as the coexistence of a fibroid tumour of the uterus, and the general state of health, forbid ovariotomy.

c. The cases in which I have punctured by the vagina and the rectum are still under observation; and I have not yet arrived at any further rule of practice than that before suggested.

d. In two patients, a free incision was made into a large mass of small cysts, in order to afford relief from pressure. The relief was given, and life somewhat prolonged; but both patients died after a few weeks.

e. In two cases, after making the first incision for ovariotomy, the operation was not proceeded with. In the first case, because the intestines were in front of and around the tumour. This patient suffered very little from the incision; and died four months afterwards from spontaneous rupture of a cyst into the peritoneal cavity. In the second case, adhesions were found to be very firm; and, as it had been arranged before the operation with the patient and her friends that if firm adhesions were found the operation should not be continued, I at once closed the wound. The patient had not bad symptoms. It was about a year ago, and she has been tapped several times since.

f. In twenty-six cases, I performed complete ovariotomy (thirty, see former note). Of these twenty-six patients, sixteen recovered perfectly. Fifteen (seventeen, see former note) are still alive, and in good health. One bore a child thirteen months after operation. Had the disease been allowed to run its natural course, or had simple tapping been the only surgical treatment adopted (none of the cases being suitable for iodine injection), I believe hardly one of these fifteen (seventeen) women would have been alive now; and, if any had lived, they would have been in the distressing state of all poor women who suffer from large ovarian growths. Had I selected my cases by refusing to operate where I was not very confident of success, I may say that scarcely a patient would have been lost. Some apparently desperate cases have recovered; and this has been the justification for operating in cases equally desperate. But it has led to several deaths which might have been delayed for some few weeks by thinking more of the reputation of surgery than of the prayers of the patient. It may be imprudent to operate in desperate cases; but the surgeon, if he fail, is not so much blamed as when he operates upon a person in tolerable health; and, if he succeed, the success is more brilliant. I think, however, we must look higher than this. We must remember that it is our duty to relieve suffering and save life, if we can; and, if we see a patient who must die soon—whose few remaining days or weeks must be days of suffering and sorrow—who (fully understanding that the effort to relieve her may hasten on her end) is anxious to be relieved—who may possibly feel that even death would be a relief—and who calls upon a surgeon for help—I believe, and act up to my belief, that it is the bounden duty of the surgeon to do his best, unless he is convinced that no help he can afford can be of any avail. If the result be unhappy, as it often must be in such cases, he will bear the disappointment with fortitude, knowing that he has done what he believed to be the best for his patient. But when, almost contrary to his expectations, almost beyond his hopes, he finds a poor, weary, wornout creature, fast sinking helplessly into the grave, restored in a few weeks to the full enjoyment of perfect health—she who was a burden to her family again the helpmate of her husband, the active mother of her children—the surgeon reaps that rich reward which you well know is so dear to all whose

[1] One of these cases has been injected a second time since the paper was read, the cyst having begun to refill two years after the first injection.

noble mission it is to relieve suffering—'the blessing of her who was ready to perish.'"—*British Med. Journ.*, Dec. 28th, 1861.

47. *Rules for Ovariotomy.*—Mr. T. SPENCER WELLS lays down the following rules for ovariotomy, the observance of which will, he believes, assist in securing a favourable result:—

"1. The operation should be performed in an airy room, the temperature of which should not be below 70° Fahr., but need not be raised to a degree, uncomfortable to either patient or surgeon.

2. The patient should be placed in the horizontal position, on a firm, narrow couch, opposite a good light, and be well covered by flannel everywhere except the abdomen and face.

3. She should be spared the fear and shock of the operation, by chloroform.

4. The incision should be made in the median line. It should not pass nearer than two inches to the symphysis pubis, and may commence just below the umbilicus. It may be extended upwards to the left of the umbilicus, and along the median line, as far as may be necessary to expose the tumour and separate adhesions. A large empty cyst may be removed through an incision three inches long; and an incision of five inches is amply sufficient for the removal of very large tumours, provided each cyst be withdrawn as it is emptied, or groups of small cysts be withdrawn unemptied one after another.

5. Any bleeding vessel in the abdominal wall should be secured before the peritoneum is divided.

6. When ascitic fluid surrounds an ovarian tumour, some of it may be allowed to escape; but the tumour should be pressed forward by an assistant to retain the fluid till the last as a protection to the intestines. Any adhesions found, whether there be ascitic fluid or not, between the cyst and abdominal wall, should be carefully separated by the hand while the cyst is full, great care being taken not to rupture any cyst. Adhesions to omentum or intestines are better left until the cyst is empty, and the adherent viscera can be seen.

7. As soon as the tumour is freed from parietal adhesions, it should be tapped by a large siphon trocar. As the fluid escapes and the cyst becomes flaccid, it is either to be fixed by a hook and withdrawn, or drawn over the canula and tied over it, to prevent any ovarian fluid from entering the peritoneal cavity.

8. As the cyst escapes, flannels wrung out of water at 96° are to be carefully wrapped round it to protect the peritoneal cavity. As secondary cysts are drawn to the opening, they are to be emptied, either by the trochar being passed on through the canula which is still tied within the first empty cyst; or by opening this cyst, passing one hand within it, and breaking down secondary cysts, while the other hand withdraws the tumour as it is emptied.

9. When there is a solid or semi-solid mass, so large that it will not pass easily through the opening, this must be carefully enlarged to the necessary extent.

10. If, as the tumour is withdrawn, omentum, mesentery, or intestine, are seen to be adherent to it, the adhesions must be carefully broken down with the fingers, or divided with the scalpel or scissors. When intestine is so firmly adherent that it cannot be safely separated, the adhering portion of cyst should be cut away, leaving it attached to the intestine, but removing the inner secreting lining membrane of the cyst.

11. Any portion of omentum separated, should be carefully held to see that no bleeding vessel is returned. Any portion which appears to be much altered from the natural condition, or torn in the process of separation, should be cut away; and any bleeding vessel should be stopped by torsion, or by ligature. If by ligature, the ends should be brought out through part of the wound. The ligature should not include any portion of omentum—simply the bleeding vessels.

12. When the whole of the tumour has been withdrawn, it will be found to be attached to one side of the uterus by a pedicle which varies very much in length and breadth, and always contains large bloodvessels. This pedicle is first compressed by the chain of an *écraseur*, or by a clamp, close to the junction of the pedicle and cyst. The tumour may then be cut away, great care being taken so to arrange the flannels that no ovarian fluid can enter the peritoneal cavity.

13. The lips of the wound are then held apart, and the opposite ovary is to be

examined. If diseased, it must be withdrawn, its pedicle secured, and the diseased organ cut away. If healthy, it is left undisturbed. A careful examination is then made, to see if there be any bleeding vessel at the spots where adhesions have been separated. Any such vessel may be secured by torsion, or by the pressure of a needle passed across it. Any blood or ovarian fluid in the abdomen or pelvis, must be carefully removed by soft sponges wrung out of water at 96°.

14. The upper part of the wound is now to be closed by passing gilded harelip pins through the whole thickness of the abdominal wall, at intervals of an inch. Each pin should perforate the skin about an inch, and the peritoneum about half an inch, from the incision on either side; so that when the two opposed surfaces were pressed together upon the pin, two layers of peritoneum are in contact with each other. These two layers adhere together very rapidly; prevent pus or other secretions of the wound from entering the peritoneal cavity; prevent adhesions of omentum or intestine to any part of the inner aspect of the wound not covered by peritoneum; and secure such firm union that a ventral hernia cannot occur after recovery.

15. The peduncle is next to be secured permanently. When the clamp does not drag on it too much, it may be left lying across the wound; but it will often be better to secure the pedicle permanently by ligature, and remove the clamp which had been used to secure it temporarily. Close below the clamp, the peduncle is transfixed by a needle which carries strong twine; and each ligature is so tied as to include a portion of peduncle of about a finger's breadth. One general ligature is then tied tightly around the whole as a security against bleeding from any vessel which may have been punctured. The smaller the portion included in each ligature, and the tighter it is tied, the more rapid is the subsequent process of separation. When the ligatures have been securely applied, the clamp is removed, and any superfluous portion of cyst is cut away; but care must be taken to leave enough beyond the ligature to prevent any danger of this slipping off.

16. When the peduncle is so long that the stump (or portion strangulated by the ligature) can be fixed outside the abdominal cavity, it is to be brought out at the lower part of the wound, and fixed there by a harelip pin, which is to be passed through it as well as through both edges of the wound. It is important that the ligatures should be on a level with the skin, and that the stump should be surrounded by dressing which separates the sloughing tissue from the raw surface. When the ligatures are fixed at the level of the peritoneum, raw surfaces surround the sloughing stump, and a sloughing condition of the wound, or putrid infection of the whole system, may possibly result.

17. When the peduncle is so short that the stump cannot be brought to the surface without great traction upon the uterus, the common practice has been to bring the ligature through the wound, and fix the free ends securely outside. In one case, they were carried through the inguinal canal beside the round ligament, and the abdominal wound was closed. In another, they were cut off short and left, the wound also being closed. It remains for further experience to determine which of these plans is to be preferred; or if only the vessels should be tied, instead of the whole thickness of the pedicle; or if acupressure can be applied successfully; or if it would be safer to trust to the *écraseur*.

18. In whatever manner the pedicle may be treated, the wound must be finally closed by a sufficient number of superficial wire-sutures, to bring the opposite edges of skin into accurate contact; and the wound may be brushed over with collodion, as an additional protection against the fetid sanies which very soon begins to surround the decomposing stump.

19. The patient is then dried, and placed in a warm bed; a hot linseed poultice, or a hot water cushion, is placed over the abdomen; and the whole is secured by a flannel belt, which is kept in its place by a pair of thigh straps.

20. The principles of after-treatment are, to secure extreme quiet, comfortable warmth, and perfect cleanliness to the patient; to relieve pain by warm and moist applications to the abdomen, and by opiate enemas; to give stimulants, when they are called for by failing pulse or other signs of exhaustion; to relieve sickness, by ice or iced drinks; and to allow plain, simple, but nourishing food.

The catheter must be used every six or eight hours, until the patient can move without pain. The harelip pins are removed on the third day, unless tympanic distension of the stomach or intestines endanger reopening of the wound. In such circumstances, they may be left for some days longer. The superficial sutures may remain until union seems quite firm. When the pedicle is kept without, the dead stump and ligatures come away between the third and tenth days; but when the stump is left within the abdomen, the ligatures have remained for several weeks. The putrid sanies which surrounds the stump must be carefully cleansed away; and the wound and surrounding skin must be protected from it by means of greased lint or collodion. The dressing should be covered by a muslin bag containing dry charcoal, or a powder of tar and gypsum, to prevent the appetite of the patient from being affected by any bad smell."—*British Med. Journ.*, Dec. 28, 1861.

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48. *Artificial Teeth with Plate lodged between the Tongue and Epiglottis.* By JAMES PAGET, ESQ.—The following case seems worthy to be added to the records of foreign bodies found in places where they were least likely to be, and producing symptoms very similar to those of organic disease.

In July, a gentleman, sixty years old, after being engaged all day in more than usually fatiguing business, and exposed to cold air, felt faint and ill in the evening, and went to his bedroom, at the hotel in which he was staying. While lying down, faint, or, perhaps, in the beginning of a slight epileptic seizure, he asked the servant to take out for him his artificial teeth—nearly complete separate sets for the upper and lower jaws. The servant, he believed, took them out. Of what immediately followed he could remember nothing more than that he became much more ill, with difficulty of breathing, and a sense of choking and suffocation, in which, in great anxiety and alarm, he sent for medical help. He was found suffering with much difficulty of swallowing and some dyspnœa. His tonsils appeared much enlarged and unusually red. These symptoms were treated, and in some measure relieved; and when one set of his teeth was missed on the day after the beginning of his illness, his medical attendants, who suspected that they might have been swallowed, were begged not to speak of them to him, for fear of the excitement and alarm that such a suspicion might excite in him. All the severity of his symptoms being subdued in a few days, the patient returned to his house at Rhyl, where Mr. Theed, as usual, attended him. For the first few days, Mr. Theed saw appearances of slight inflammation of the fauces, but these soon subsided: from that time nothing morbid could be seen in his throat. He had considerable and increasing difficulty of swallowing, was obliged to drink very slowly, and to cut all his solid food into very small fragments, and force them down his throat with gulping. Occasionally he was almost choked by food becoming involved in a tenacious mucus, which appeared to be secreted in large quantity at and beyond the fauces. Occasionally, also, he vomited after taking food. He had frequent short, "hacking" cough; and once or twice hawked up a little blood. He suffered no considerable pain; but felt constriction about his cricoid cartilage, and always referred to that part as the seat of obstruction hindering his swallowing. His voice was rough and rather hissing; his breathing sometimes with wheezing.

Many times, while watching these symptoms, Mr. Theed suspected that they were due to some foreign body in or near the larynx: but he could see none; and the patient, as often as inquiries were directed to this point, declared somewhat impatiently that the thing could not be. Especially when with the tardily given permission of his relatives, he was asked if the false teeth, which he had lost on the night of his illness, might not have slipped into his throat, he maintained that it was quite impossible; for what he had lost was a whole upper set which, he believed, had been unluckily thrown away with the water into which they were put at night. The piece was far too big, he said, to go into his throat or to be there without his knowing it. However, as none of his symptoms diminished, and he was becoming very thin and feeble, Mr. Theed, in November, brought him to London for consultation. His feeble appearance, his dull pale face, his emaciation, and the recital of his case, made me fully expect that he had cancerous stricture of the upper part of his œsophagus. On examining his

mouth and fauces, I could see nothing unnatural, till, on extremely depressing the back of the tongue, I saw something white near his epiglottis—but too obscurely to guess what it was. Passing my finger to the side of the epiglottis, I felt teeth there, and soon hooked out the whole lost set, with their gold palate-plate and other fittings.

The piece lay between the base of the tongue and the epiglottis, very closely fitted to all the surface on which it rested. The teeth were directed upwards, and I believe the incisor teeth were next to the epiglottis, and the notch in the palate-plate next to the root of the tongue.

The most remarkable point of this case, next to the fact of the patient being unconscious for more than three months of what he had in his fauces, is that a thing so large could be out of sight at the root of the tongue. It may be well, therefore, to repeat that it was completely invisible, except when the base of the tongue was exceedingly depressed, and even then only a small part of it was obscurely seen. To this, and to the patient's dread of any other examination than that with the eye, it must be ascribed that the lost teeth were not discovered long before I saw him.

It may be worth notice, that the patient referred to the parts about the cricoid cartilage, as the place of obstruction in swallowing. This may be an instance of transference of morbid sensation, similar to that by which the irritation that excites coughing, wherever its true seat may be, is felt as if it were at the top of the larynx. A similar deceptive transference of sensation was observed in a lady whom I saw with what I supposed to be cancerous stricture of the upper boundary of the œsophagus. She always pointed to the cricoid cartilage as the place of obstruction: but her disease proved to be a cancerous ulcer of the tongue immediately in front of the epiglottis, and her pharynx and œsophagus were healthy.

Since the removal of the displaced teeth, the patient has regained health, and Mr. Theed's last report of him is, "I think him as well as before" the accident.

P.S.—Since this narrative was in print, Mr. Theed has written that the patient has had "a very severe attack of epilepsy, which lasted for five or six hours, during which time the convulsions were so violent that if I had not removed (though with great difficulty) his *full* set of teeth, he would inevitably have broken them into pieces. This, I think, elucidates the previous mystery."—*Med. Times and Gaz.*, Jan. 18, 1862.

OPHTHALMOLOGY.

49. *Treatment of Symblepharon.*—On the 6th of June, 1860, the editor of this Journal communicated to the Philadelphia College of Physicians a very brief notice of a case of symblepharon successfully treated by dissecting apart the adherent surfaces, and preventing their reunion by interposing a shield of tin foil, and maintaining it in its position until the surfaces had healed. (See No. of this Journal for Jan. 1861, p. 116.) Mr. J. C. Wordsworth, assistant surgeon to the Royal London Ophthalmic Hospital, in a recent article (*The Royal London Ophthalmic Hospital Reports*, Vol. III. No. II.), in commenting upon this case expresses doubts as to the permanency of the cure. It may be here stated that when the operator last heard from the patient, a year after the operation, there had been observed no tendency to a recurrence of the trouble, on the contrary, as was hoped, the levator muscle of the upper lid had increased in power, so that the previous drooping of the lid was diminishing. The Editor may add that he has not lately heard from the patient, but feels confident that he should have done so, had not the case gone on satisfactorily.

Mr. Wordsworth assumes that glass shields are unknown in this country. He would have been disabused on this point, had all the remarks of the Editor, with the discussion which took place at the meeting of the College, been reported.

Mr. J. Pridgin Teale, in a subsequent No. of *The Royal London Ophthalmic Hospital Reports* (Vol III. No. III.), describes a new operation for the relief of symblepharon, by transplantation of conjunctiva; and he relates four

cases in which he has successfully performed it. These cases, Mr. Teale says, appear to establish the following points:—

"1. That the conjunctiva may be transplanted without losing its vitality or properties.

"2. That a symblepharon may be replaced by loose movable conjunctiva, at least equal in breadth to the flaps originally transplanted.

"3. That a comparatively small breadth of conjunctiva introduced into the situation of a symblepharon is sufficient to afford greatly increased, if not perfect, freedom of motion to the eyeball, a freedom which continues to increase for many months after the operation.

"4. That where the conjunctiva of the lateral and upper parts of the eyeball has not been damaged, flaps of a quarter of an inch in breadth may be taken away without giving rise to any deterioration of the parts whence they have been taken.

"5. That in separating the adherent eyelid from the globe, it is not necessary to dissect off from the cornea any portion of skin that may be adherent to it, but that it is better to commence the separation of the lid at the margin of the cornea, leaving the opaque apex of the symblepharon adherent to the cornea."

50. *Arsenic in Pustular Ophthalmia.*—Mr. CRITCHETT has of late often prescribed arsenic in certain chronic forms of ophthalmia occurring in young persons. He speaks very highly of its efficacy. It is chiefly in intractable cases of pustular ophthalmia which have lasted far beyond the usual period, and are attended by intolerance of light and a feeble and irritable state of the system generally, that this remedy seems useful. In the same class quinia and iron are often very effectual, but the arsenic not unfrequently manifests peculiar and superior powers. If desired, it may be conveniently prescribed in combination with iron. For children, the common steel wine is a very suitable vehicle. For a child of five years old a minim of Fowler's solution in a teaspoonful of steel wine, given three times daily, is an appropriate prescription, and one under which many a case of severe pustular ophthalmia will recover with great rapidity.—*Med. Times and Gaz.*, Jan. 4, 1862.

MIDWIFERY.

51. *Protracted Gestation.*—Dr. M'COWAN related to the Obstetrical Society of Edinburgh the history of a woman who, in her third pregnancy, carried her child three months beyond the period at which it had been calculated that it should have been born. The child had to be extracted with the forceps, and was found to have a greatly ossified head, and to be largely developed round the shoulders and the pelvis, so that, although there might have been some miscalculation as to the exact dates, there seemed little doubt that utero-gestation had been protracted for an unusual length of time. Calculating from about fifteen days after the date of the last menstruation, the child should have been born in the latter part of May, but it had not been born till the 20th of August.

Dr. Bruce remarked that patients sometimes made considerable mistakes in their reckoning, and he had lately delivered a woman two months after it had been calculated that the child was due.

Dr. Moir observed that, in the case related by Dr. M'Cowan, the data were not determined with sufficient precision to admit of its being cited in a legal court, although, from the state of the fœtal head, and the previous history of the patient, he had himself little doubt that gestation had in her been protracted, though not, perhaps, so long as three months beyond the normal period.—*Edin. Med. Journ.*, Dec. 1861.

52. *Protracted Retention of Blighted Ovum.*—Dr. UVEDALE WEST exhibited to the Obstetrical Society of London (Feb. 5, 1862) a specimen of this which had come away two days previously, after being retained until the expiration of

twelve months from the commencement of pregnancy, the embryo having probably perished as early as the end of the fourth month. Independently of the interest attaching to the specimen as an example of protracted retention of blighted ovum, Dr. West thought the case instructive, as being one in which both patient and doctor had been right and wrong at the same time; the former having to the last persisted in the belief that she was not only pregnant, but normally so; the latter having told the patient, when consulted by her after the expiration of her nine months, that she was not only mistaken, but altogether so. The ultimate expulsion of the mass exhibited, however, explained everything.—*Med. Times and Gaz.*, Feb. 15, 1862.

53. *Puerperal Fever in the new Lying-in Hospital at Munich.*—This Hospital was opened in 1859, and puerperal fever soon became endemic there, and every year since it has been visited by this terrible scourge. The most intense epidemic was that of last year, and a correspondent of the *Medical Times and Gaz.* (Feb. 8, 1862) gives some of the more important observations which were made at that time by Dr. Hecker, Professor of Clinical Midwifery, and Dr. Buhl, Professor of Pathological Anatomy.

During the summer and autumn of 1859, the sanitary condition of the women in the Lying-in Institution was, on the whole, satisfactory. Certain premonitory symptoms of an epidemic of puerperal fever having been observed towards the close of the year, the first bad cases of that disease occurred in the middle of January, 1860. The epidemic lasted from that time till July. There were 663 births in the six months, and 80 women were affected with the fever, that is, twelve per cent. Of these 80 there died 33, that is, 41 per cent. of those affected, and 5 per cent of the whole number. Simultaneously with the puerperal fever a very dangerous affection of newly born infants was observed, which was quite analogous to the disease from which the mothers suffered. Amongst the 33 children of the 33 women who died, 20 also died within the first week, and evidently under the influence of the epidemic. Of 49 children borne by 49 women who recovered, 12 died from the same cause. The disease of infants showed the following forms:—

1. Acute dissolution of the blood; of which 13 cases were observed. The children collapsed soon after birth in an extraordinary manner; the skin assumed a dirty yellow colour; food was refused, the respiration became accelerated, and screams were heard as in acute hydrocephalus. Death generally ensued within 24 hours, and the post-mortem examinations which were made in every case with the utmost care, did not show any local disease; only the blood appeared smeary, and there was a striking putrefaction of all organs, which are prone to this process, and which had evidently commenced during life; this was observed even if the cavities of the body were opened soon after death. Cadaveric spots were spread over the whole surface of the skin. This septic condition generally began immediately after birth; but in one case Professor Hecker satisfied himself that it had already commenced in utero. This was the case of a woman in her second pregnancy, and who fell ill during parturition with violent vomiting of green matter; she then gave birth to a dead child, and died herself on the third day after delivery. The child was a well developed girl, of 6⅔ pounds, and had died during parturition without any visible cause, as the umbilical cord had not been constricted, and the second period of parturition only lasted an hour and a-half; from which it was fairly concluded, that the illness of the mother, which had come on during parturition, had caused the sudden destruction of the life of the infant. If in such cases of dissolution of the blood, a local disease occurs, this affects the respiratory organs; the autopsy showing signs of lobular pneumonia having commenced. In two cases there was extensive hepatization of both lungs, and putrid exudation.

The second class of cases consisted of septic inflammation of the umbilical vessels, with its sequelæ. Three cases of arteritis umbilicalis were observed, one of phlebitis, and four of more or less diffuse peritonitis, with discoloured exudation matter. In these cases there were also morbid appearances in the skin, viz., erythema, which in one case extended over the whole surface of the body

with a rapidly fatal result; and erysipelas migrans with strong induration of the affected parts, and which appeared several times in the face.

A third class of cases was characterized by atrophy. This form of the disease was observed in four cases; the subjects being originally strong children, and no cause being apparent but the miasma.

Regarding etiology, it appeared that the stay of the pregnant women in the Lying-in Hospital disposed them to puerperal fever. The majority of patients fell ill within the first week of their stay in the Institution. Of those who entered it during parturition, 13.8 per cent. fell ill, while of those who had been in it from 1 to 4 days before delivery, 29 per cent. became affected. If, however, the pregnant women remained longer in the Hospital, they appeared to become callous to the contagion. In the wards for poor patients the disease was much more frequent than in those for private cases. It would seem possible that the clinical instruction of the students in the examination of pregnant and parturient women might be the cause of the affection, and M. Semmelweiss even now holds the opinion that the origin of the disease is entirely due to infection with cadaveric poison. But several objections seem to be fatal to this supposition. During the epidemic I am speaking of, there was no occasion for such an infection of the pregnant women taking place. The autopsies were never made in the Lying-in Institution itself, but in the anatomical theatre; and neither the students nor those who had the women under their care, ever touched the dead bodies. Besides, the hands were always well washed before an examination was made. Moreover, it happened that infants fell ill and died of puerperal sepsis, whose mothers made a good recovery. This fact is not consonant with the assumption of an infection by cadaveric poison. It would be sophistry to say that, although the mother seemed to be well, she was nevertheless infected; for where there is no morbid symptom, we are not justified in assuming the existence of a complaint. Another objection against the theory of M. Semmelweiss would be, that the women fell ill in sets, and that sometimes not a single case of fever occurred during a fortnight. It has often been stated that there was much more disposition to contract the fever in women, who had had a protracted labour; and that primiparæ were, therefore, more exposed to danger than such as had already borne children before. The observations made here on this point during the last epidemic prove that many fell ill whose labour had been very quick, and that the duration of the labour had no relation to subsequent illness. I will also mention that of 80 cases in which fever occurred, birth was accomplished by Nature in 75 cases, while only in five instances operations were necessary.

The researches of Professor Buhl concerning the pathological anatomy of this disease are of importance. Proceeding from the fact that the inner surface of the uterus is always affected, he looks upon this as the starting point of all other morbid changes. The disease spreads from the place mentioned along three different roads, viz., the mucous membrane of the tubes, the bloodvessels, and the lymphatic vessels. In conformity with this circumstance there are three principal forms of puerperal fever. The first is puerperal peritonitis without pyæmia; the irritant matter produced in the uterus spreads through the canal of one or both tubes, and through their orifice into the peritoneal cavity; their tissue becomes swollen, loosened, and injected, and the canal is filled with thick pus. There is either unilateral inflammation of the serous covering of the ovary and the womb, or general peritonitis. This form is most frequent if there be no epidemic; but during such an one it is very rare, and only occurs in connection with one of the other forms. Not a single case of this kind occurred during the epidemic I have described. This form is not nearly so dangerous as the two others, recovery being not uncommon; and if death results, this is generally the consequence of general peritonitis.

In the second form, which is puerperal pyæmia without peritonitis, the inner surface of the womb constitutes, as it were, one large wound, and the affection is traumatic. There are symptoms of absorption of putrid matter by the veins, and we find not only normal coagula, but also thrombi containing pus, and prone to putrefaction, especially in the veins at the insertion of the placenta; also in the veins of the plexus pampiniformis, the spermatic veins, the vena cava inferior, the renal or crural vein and the cavities of the heart. There is often em-

bolic inflammation, followed by suppuration and gangrene of the lungs, the spleen (which is always enlarged), the kidneys, the eyes, the brain, and other organs. The characteristic feature of this form is that, unless a complication should be present, which is rarely the case, there is no peritonitis. It is more dangerous than simple peritonitis, and may occur sporadically; but it is more frequently epidemic, although neither so common nor so intense as the third form. It is not unfrequently an indication that the violence of the epidemic is on the decrease. For while pyæmia without peritonitis scarcely ever ends in death before the ninth day, but is generally protracted over two, three, and more weeks, the third form generally proves fatal within the first week after parturition, and in some cases even the very day after delivery, or a few hours after it. This second form was, in the epidemic I have described above, only observed four times.

The third form is entirely different from the second and the first. There is always peritonitis, but no thrombosis of the veins, which are merely filled with thin, discoloured blood. The disease spreads by absorption through the lymphatic vessels and the connective tissue which envelopes them and the blood-vessels, and where yellow coagula, pus and putrid matter, are accumulated. Besides this local creeping of the disease, there is also general infection by absorption of poisonous matter in the blood, either immediately from the womb or from the infected lymph. This form may, therefore, be called puerperal pyæmia with peritonitis, or pyæmia with lymphangitis. It is the most malignant form regarding intensity, rapidity of course, and fatality, and it is also the most frequent in epidemics of puerperal fever. Of thirty-nine fatal cases in the last epidemic, thirty-five belonged to this form. If death ensued very rapidly, there were only general septic appearances in the body; and local changes only became apparent if the disease was of a somewhat longer duration.

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54. *Pathological Anatomy of Puerperal Fever.*—Professor Buhl, of Munich, having examined the bodies of fifty women who died of puerperal fever, states that a constant and characteristic appearance is a pappy, red or dark brown or grayish-black mass lining the inner wall of the uterus, giving forth sometimes a gangrenous and sometimes a putrefactive smell. It is this matter which supplies the poisonous infection of puerperal fever; but as to the cause of the production of the fever differences of opinion prevail; some regarding it as the consequence of the immediate passage of poisonous matter into the wound, while others think that a preliminary poisoning of the blood by miasmata takes place, the corrupted mass being only a secondary result. Anatomically, we may distinguish two forms of puerperal fever—puerperal pyæmia and puerperal peritonitis—forms which may be clinically distinguished, as it is of importance in prognosis that they should be so.

Puerperal pyæmia does not usually prove fatal before the ninth day, and frequently not until after the third week. It is chiefly met with where the disease does not put on an epidemic form, the veins being the channel of infection; coagula, accompanied by suppuration, being found in the veins of the walls of the uterus, in a pampiniform plexus or in a spermatic vein. In no instance did the author ever find both spermatic veins obstructed, and in only one case was the entire vena cava inferior filled with adherent coagula. These coagula and their subsequent caseous metamorphosis are quite sufficient to establish the existence of puerperal pyæmia, the so-called metastatic abscesses being seldom met with. Œdema of the lungs and ecchymosis of the pleura were frequently met with by the author.

The puerperal peritonitis was more frequent, more violent, and more rapidly fatal than the puerperal pyæmia, inasmuch as death sometimes occurred within two days after delivery, and in but few cases was delayed to the third week. Of the 32 cases of this variety only 2 were chronic, proving fatal in the course of six or eight weeks. In all the cases purulent exudation was found, in 18 instances occupying the tubes, and in 14 the subserous tissue of the uterus. The two conditions were found combined in only 4 instances, and a plugged condition of the veins was observed only in 5 instances. Of the 18 instances in which puerperal pyæmia occurred, in only 2 was there pus in the tubes, and in only 1 subserous effusion of pus; so that of 20 cases of tubal suppuration, in 18 peritonitis

was present, and of the 14 cases of subserous suppuration peritonitis occurred in 13. On the other hand, of 23 cases of purulent coagula of the veins in only 5 did peritonitis occur, and in all these there was subserous or tubal suppuration also, and in 16 cases in which these parts exhibited no pus, no peritonitis took place. The disease of the veins thus bore no relation to the occurrence of peritonitis. It results from these facts, that peritonitis may arise either from the immediate passage of the poisonous material from the uterus through the tubes, or from the conveyance of this from the inner wall of the uterus by the lymphatics. The supposition that the pus may have proceeded from the peritoneum into the tubes is negatived by the fact of these having been free of it in fourteen cases; and the pus of the peri-uterine, subserous tissue or of the lymphatic vessels must be regarded rather as a consequence than a cause of the peritonitis, inasmuch as it was absent here in twenty instances. The prognosis is not alike in these two modes of origin of the peritonitis. That induced by pus from the tubes is a much slighter and more simple inflammatory process, met with when there is little or no epidemic extension of the disease; while the peritonitis resulting from lymphatic absorption is a much severer form of disease, preceding or accompanying general infection, and is especially met with in the epidemic form.

In both of the principal forms of puerperal fever, besides the morbid uterine appearances there were found—1. Almost constantly swelling and watery infiltration of the retro-peritoneal, inguinal, and (though seldomer) the mesenteric glands. 2. Osteophytes on the internal surface of the cranium. 3. In several cases, especially in pyæmia and lymphatic absorption, a distension of the cortical substance of the kidney, together with microscopical appearances corresponding to the acute stage of Bright's disease. In only two of fifty individuals was tuberculosis found.—*Med. Times and Gaz.*, Feb. 1, 1862, from *Froriep's Notizen*, 1861. No. 13.

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55. *Coccygodynia.*—This affection, to which attention was drawn by Professor Simpson, a short time since, is said by SCANZONI to be far from rare, for he has seen twenty-four cases of it during the last four years. It has been, he says, frequently mistaken for a symptom of some disease of the genital organs, which often accompanies it; and also for hemorrhoidal pain. Dr. Scanzoni has never observed the disease except in women who have borne children; and in nine cases, the patients distinctly traced the origin of their pain to the date of their confinement. Of nine women, six had only had one child; and in five cases, the pain appeared after instrumental labour.

We may, therefore, consider that the act of child-bearing is the essential, if not the sole cause of this pain; and we can readily understand why this should be the case, when we recollect the injuries to which the coccyx is liable during confinement. The violent forcing of the lower part of the bone backwards, sometimes to the extent of half an inch, and the stretching and tearing of the attached ligaments, are quite enough to excite inflammation and exudation between the bones which form the coccyx. That this really does frequently happen is shown by the researches of Luschka, who pointed out the frequent anchylosis of the bones of the coccyx which takes place. Dislocation of the bone, of the kind here spoken of, must evidently cause pressure upon and injury of the nerves, by the tearing and rupture of the ligaments which naturally protect and sustain them. Hence, we can readily understand why the delivery of the child should be the cause of coccygodynia.

The persistence of the affection is to be ascribed in part to the peculiar relations of the coccyx to the parts around it, and in part to the diseases which so frequently accompany it. When any change in the position or structure of the bone has taken place, every movement of the lower extremities, sudden sitting down or rising up, or even evacuation of hardened feces, must produce a movement of the bone. Affections of the neighbouring organs also aid in keeping up the coccygodynia. Chronic metritis, ulcerations of the os uteri, anteversion and retroversion, very often accompanying coccygodynia. Dr. Scanzoni cannot, indeed, recollect a single case which was not attended by some one of these affections. He has, for example, seen cases in which the coccygodynia immedi-

ately ceased, when an anteverted uterus was reduced to its proper position; or when arrested menstrual function was removed. In these cases, we must consider that the persistence of the coccygodynia (originally excited by the act of parturition) is maintained by the affection of neighbouring organs.

As regards the treatment, Dr. Scanzoni considers that it is of the first importance to remove the affections of any neighbouring organs. He is satisfied that no local treatment is of any avail so long as any of the neighbouring organs either press upon the bone or excite the coccygeal nerves. The first business of the physician, therefore, is to endeavour to ascertain the state of the neighbouring organs and parts. When the coccygodynia is recent, a few leeches, or cupping, should be frequently applied over the bone, warm effusions, hip-baths, etc. The patient should maintain a horizontal position, and refrain from all violent exertion. The bowels should be kept loose. These means are sometimes followed by a temporary cure; but the pain generally returns after a time. In such cases, when there is no sign of inflammation, Dr. Scanzoni has found subcutaneous injections of morphia of great service; and he cannot, like Dr. Simpson, regard them as merely palliative. He has not found the sulphate of atropine so efficacious as the morphia. Dr. Scanzoni has not yet tried subcutaneous section of the muscles and tendons, as recommended by Dr. Simpson; for he had never met with a patient in whom the intensity of the pain was such as to require such an operation, which is not without danger.—*British Med. Journ.*, Dec. 28, 1861, from *Wurzburger Medicine Zeitschrift.*

56. *Painful Muscular and Fascial Contractions along the Vaginal Canal—Vaginodynia.*—Prof. Simpson stated to the Obstetrical Society of Edinburgh (Nov. 14, 1861) that he had lately seen a number of cases, and he had seen them from time to time for years, where painful muscular or fascial contractile bands existed in the sides or along the course of the vagina. He had known some of these cases to have been mistaken and treated for various alleged affections of the uterus or its appendages. The pains complained of were, sometimes, principally sympathetic or reflex, and referred to the uterus or other parts, and often aggravated by all movements calling the pelvic muscles into action. He had under his care at present a patient whose chief complaint was a constant disagreeable pain in the sacral region; another who had the same severe kind of pain in the left iliac region; while a third could not walk because of the pain which she felt in the pelvis whenever progression was attempted. In this class of cases the uterus and ovaries would, on careful examination, be found healthy, but a tense, corded, transverse band could be felt at some part of the vaginal wall, and usually, if not always, on one side of it, and placed, as it were, more or less deeply beneath or below the mucous membrane. The band or cord was most commonly placed about an inch above the vaginal orifice. It varied considerably both in thickness and tenseness in different cases. When the cord was touched and stretched with the finger, the patient complained of more or less severe suffering; and this was the pathognomonic mark of the disease. Sometimes the patient only experienced pain at all when the vagina was touched; and these cases usually came under treatment in consequence of being unable to submit to marital intercourse. He had one patient under treatment who could not bear at first to allow herself to be examined vaginally without chloroform, because of the pain experienced from the touch of the finger. Painful and distressing as these cases were, they were very amenable to treatment—division or rupture of the tight and contracted band being usually sufficient to afford complete, and often instantaneous relief; and in the milder form of cases, sedative applications were sometimes sufficient. The method he had usually adopted for the cure of very severe cases of this kind was, after chloroforming the patient, to divide the tight band by means of a tenotomy knife introduced underneath the vaginal mucous membrane. It was a bloodless operation, and had never been attended with any worse consequences than the formation of a thrombus, which had taken place in one patient and had delayed her recovery. He had tried also to effect the object of stretching or rupturing the band by dilating the vagina forcibly with the fingers, whilst the patient was asleep with chloroform. The principle of cure

was the same as that employed for the relief of fissure and spasmodic contraction of the orifice of the rectum. But less severe means were occasionally successful. Patients afflicted with this complaint were usually relieved, and sometimes cured, by the daily introduction into the vagina, for a length of time, of local sedatives, such as belladonna ointment and chloroform. A small cup-like indentation was made with the finger in an ordinary belladonna pessary; a few drops of chloroform having been poured in, and then shut in by putting a piece of ointment over the orifice, and then the whole was introduced into the vagina, where the ointment slowly dissolved, and became absorbed along with the chloroform. As to the probable nature of these painful contractions, he (Dr. Simpson) could not supply any very definite answer, but he thought they depended in different cases either, first, on a kind of permanent spasm of some of the muscular fibres around the vagina, of the same nature as the spasm of the sterno-cleido-mastoid muscle, which produces torticollis; or, secondly, they were due to contractions going on slowly in some portions of the pelvic fascia, perhaps resulting from a kind of subacute inflammation, and resembling those often painful contractions of the palmar fascia, which are the acknowledged cause of "crooked-in fingers." Dr. S. believed that the common anatomical seats of these painful vaginal contractions were either in the bundle of muscular fibres forming the anterior border of the levator ani, or in the duplicatures or edges of the pelvic or recto-vesical fascia at the points where the vaginal canal perforates the fascia and receives insertions and prolongations from it. These contractions sometimes appeared in patients in whom no previous disorder of any of the pelvic organs could be ascertained to have existed; and he had lately seen one patient who was the subject of it, and who had never been able to allow her husband to approach her, so that in her the morbid condition must have been present before marriage, although she had never been in a position to be made aware of its existence. Instances, however, like this last oftener belonged to a class of cases where apparently the stricture was not, as in the preceding class, in the course of the vaginal canal, but was situated at its very orifice, independently apparently, in most, of all disease there except super-sensibility and spasm of the sphincter of the vagina, but traceable in others to hyperæsthesia of the mucous surfaces of the vulva or vagina, resulting from irritable eruptions or other morbid states of these mucous surfaces.—*Edin. Med. Journ.*, Dec. 1861.

HYGIENE.

57. *Early Vaccination.*—By many practitioners the vaccination of young infants has been objected to, as well in consequence of certain severe morbid phenomena to which it is supposed to give rise when performed at too early an age, as from the difficulty of then placing the system fully and permanently under its prophylactic influence. In 1821, M. Husson, a skilful vaccinator, declared that from twenty years experience he had observed no notable difference in the results of the vaccinations performed upon infants a few days old, and those practised in persons of a more advanced age. From this opinion several authorities of no mean weight dissent, including Bousquet, Barron, and, more recently, E. Barthez. The latter refers the death even of young infants, in many instances, to the too early performance of vaccination. We learn from a most interesting paper, read in February last before the French Academy of Medicine, by Dr. DEPAUL, that the views announced by M. Barthez gave rise to much discussion at one of the meetings of the *Societé Médicale des Hôpitaux;* in the course of which M. Legroux stated that he vaccinated all the new-born infants during his term of service. Believing that when accidents did occur they were caused by the number of punctures, he, finally, made only one in each arm. Since then he has not met with the slightest unfavourable occurrence that could be attributed to vaccination. M. Behier also declared himself in favour of early vaccination. He has performed it on the second day after birth

without the occurrence of any accident. M. Blache, who was formerly in favour of early vaccination, has become opposed to it, since he has repeatedly seen bad effects result from it at the *Hôpital Cochin*. He believes smallpox to rarely occur in infants under two months old, excepting when the disease is epidemic; hence, before then, vaccination, as a general rule, is not demanded.

In the *Union Médicale* there is a communication from Dr. Ragaine, of Mortagne (Orne), referring to a memoir presented by him to the Academy, in 1859, in which he announces that he had vaccinated over four hundred infants, from eight days to one month old, and in all the vaccination had been mild and favourable, unattended with either roseola, erysipelas, or enteritis. Some of the infants had diarrhœa, but this was referable to other causes than to the vaccination.

Dr. Laforgue, of Toulouse, in the same journal, states that when he first took charge of the maternity and nursery of *Hôtel Dieu*, he was astonished at the very early period after birth at which infants were there vaccinated, but he soon became convinced that the fears he had entertained in respect to such early vaccinations were groundless, and the practice was pursued by him, and without any accident in the case of healthy children who are secured from those morbid influences which are so fatal in lying-in hospitals and in nurseries.

In the above institution a series of experiments was instituted with the matter produced by inoculating the cow with the *grease* of the horse. Among the infants vaccinated with this matter, twenty-eight were between one and sixteen days. Six punctures, three in each arm, were made in each case, all of which gave rise to the characteristic vesicle. A single one of these infants, fourteen days old, was attacked with severe erysipelas, which extended over the entire body; but, nevertheless, terminated favourably. M. Laforgue has found that the inflammatory action, to which vaccination gives rise, was, in general, less in early infancy than it is in older subjects. From his observations he infers that vaccination performed in early infancy is unattended with danger; and that the accidents observed subsequent to the operation are due to causes foreign to it. He does not, however, recommend vaccination to be performed before the third month after birth, excepting in lying-in hospitals and in public nurseries, or during a variolous epidemic.

In the *Gazette des Hôpitaux* (Oct. 1861) there is a communication from Dr. Godefroy, of Rennes, announcing that since 1840 he had vaccinated all the infants placed in the clinic, from one hour after birth to seven days, which was the longest period to which he deferred it. He always made three punctures in each arm, and has never seen the slightest evil result from it.

Dr. Robert, of Guyonvelle (Haute-Marne), in a memoir sent to the Academy, remarks that he has had thirty years practice, and has vaccinated more than twenty thousand persons. In the commencement of his practice he was accustomed to defer vaccination until after the third month, but, upon a solicitation, he had every year vaccinated a few infants, from one to twenty days old, and has not found subaxillary engorgements, phlegmons, or erysipelas to follow more frequently than when the operation is not performed until some months or a year after birth. In 1200 vaccinations of children, aged between one and thirty days, there occurred, during or after the course of the vaccination, once in three hundred cases, an attack of simple erysipelas; once in four hundred and seventy-seven cases, the occurrence of phlegmon, and once in three hundred cases, submaxillary engorgement. The same accidents were rather more frequent in infants vaccinated after they had attained three months. Thus, erysipelas occurred once in two hundred and ninety-five, phlegmon, once in four hundred and twenty, and submaxillary engorgement, once in two hundred and fifty.

In the maternity of Paris, according to M. Danyau, from March 24th, 1859, to July 1st, 1861, seven hundred and thirty-five infants were vaccinated—in all cases shortly after birth. Two hundred of these remained throughout the course of the disease; among these only three accidents were observed, viz., a phlegmon, which was healed, and two cases of erysipelas of the arm, one of which terminated favourably, and the other was fatal.

Dr. Depaul remarks that in the young infants vaccinated by him, in the obstetric clinic, as well as in those vaccinated at the Infant's Hospital, no injury

was observed to result that could possibly be attributed to the too early performance of the operation.

From the facts and considerations presented by Dr. Depaul, he believes it to be proved—1st. That vaccination may be performed on the infant, shortly after birth, without the liability of its being attended with any more serious consequences than when the operation is postponed to a later period. 2d. In the case of infants placed under circumstances which diminish greatly their liability to exposure to variolous infection, vaccination may, without inconvenience, be postponed until they are two or three months old.—*Moniteur des Scien. Méd. et Pharm.*, Feb. 4, 1862.

58. *Utility of Bran in the Manufacture of Bread.*—The authorities judiciously attach much importance to the details of the manufacture of bread, and on the other hand, the trade endeavours to avail itself of certain scientific data to supply the therapeutist with hygienic and medicated bread. *Panification* is a question of paramount interest; and we can readily conceive why a surgeon holding an eminent position in the navy, Professor FONSSAGRIVES, has assigned to the subject a prominent place in his excellent treatise on elementary hygiene which has just been published by J. B. Baillière and Sons.[1]

"Wholesome bread," say the Instructions of the Military Board of Health, "must be well leavened, *i. e.* present numerous holes in all its parts; it must exhale its own peculiar agreeable odour, the crumb must be homogeneous, elastic, and the holes must reappear after slight pressure of the crumb; in short, the crust must be yellow, sonorous, and everywhere adhere to the crumb. Bread is of bad quality, badly prepared or baked, when its smell is faint or mouldy; when its colour is too dark or unequal; when it contains lumps of flour; when the crumb rolls up into compact masses, which do not resume their shape when pressed, or is diffluent and greasy; finally, when the crust is pale, soft, or burned, and detached from the crumb." To be well digested, bread should be eaten fifteen or twenty hours after it has been baked. The desire of purifying to its utmost limits flour intended for bread, has induced the directors of meal-stores to separate from it principles, the assimilation of which was turned to good account. Bran, for instance, performs in the digestion of bread a part, the importance of which, acknowledged in our days by American practitioners, and among others by Warren, had not escaped Hippocrates: "Brown bread," says he, "is siccative and aperient; white bread feeds more, and is less laxative." This is so true, adds Mr. Fonssagrives, that the question has been asked in latter times, and not without some reason, if the very great frequency of constipation does not originate in the bread being made of flour too finely sifted. It is, however, a positive fact that a coarser bread, made of a mixture of various flours or rather rye bread, very efficaciously removes torpidity of the bowels.

Mr. Fonssagrives considers as justly renowned in this respect the rye-bread of Ponscorff in Brittany, the taste of which is very savoury. The convalescent whose digestions are indolent may advantageously resort to its use; but in cases of habitual and stubborn constipation, this article of food is insufficient, and bran bread must be used.

"This bread," says Mr. Payen, "is much used in England. It is prepared with wheat, containing from 5 to 10 per cent. of bran. Its crust is dark-coloured and its crumb is brown. Persons who use it take it but once or twice a week and ascribe to it cooling properties due to the indigestible part of the bran, which in this case, acts mechanically in the same manner as white mustard seed."

Mr. Fonssagrives has frequently recourse in his own practice to bread made with equal parts of fine bran and wheat flour, and if the coarseness of its appearance does not deter them from its use, invalids derive much advantage from it in case of obstinate costiveness. A piece of bread weighing 3 or 4 ounces is eaten at each meal, and the latter is completed with ordinary bread. Dr. Lebarillier, of Bordeaux, has also adduced cases in which almost unconquerable constipation was removed by the persevering use of bran bread. It is specially adapted

[1] Hygiène alimentaire des malades, des convalescents, et des valétudinaires, ou du régime envisagé comme moyen thérapeutique.

to cases of intestinal torpidity connected with uterine disease; but its success, according to Mr. Fonssagrives, is frequently compromised by the carelessness of bakers, who refuse to prepare this bread by kneading it separately, a condition indispensable to its success: for bran bread, prepared simply by the incorporation of bran in a piece of kneaded dough, has an unpleasant aspect and no longer gives the results required.—*Glasgow Medical Journal*, Jan. 1862, from *Journ. Pract. Med. and Surg.*

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59. *On the Bad Effects of Marriages amongst Near Relations.* By Prof. Duvay, of Lyons.—A general interest is attached to the inquiries which have for their object the establishment upon positive facts of the bad effects arising from marriages contracted in certain conditions. Among these, one of the most important is the question of consanguinity, the dangers of which, in a sanitary point of view, have long passed unrecognized, and have only been suspected from time to time in consequence of the expression of opinion on the part of persons who, though they spoke with all sincerity, carried no scientific weight. At present it is different, and in this kind of alliance all enlightened men may see an efficient cause of infirmities, of constitutional diseases for the individual, and of degeneration for the race.

It has been said by the small number of practitioners who maintain the innocuousness of marriages among relatives, that the influence of these alliances is good or bad according as the parties are exempt from, or subject to, constitutional diseases; that consanguinity presents no disadvantages, and should even produce good results, if those who marry are exempt from all hereditary disease, or still better, are endowed with superior physical and mental qualities; but that, on the other hand, these marriages are necessarily hurtful if they take place between subjects affected with transmissible diseases, of which the intensity thus increases, not by simple addition, but by a sort of arithmetical, or even geometrical progression. Such is not the language of facts, which show that in pure consanguinity, isolated from all circumstances of hereditary disease, resides, *ipso facto*, a principle of organic vitiation. The following family history affords a full confirmation of this statement:—

M. and Mme. A., belonging to a department in the south of France, had six children, two sons and four daughters. All six attained a pretty advanced age, and all married; three of them married cousins-german, the other three married strangers. The following table arranges them into two categories, comparing the number of children each had, with the number of children who died young:—

1. Marriages between relations:—

	Number of children.	Of which died young.
Miss M. A. . . .	11	11
Mr. A.	8	6
Miss C.	5	3
	24	20

2. Marriages with strangers:—

Mr. V.	6	2
Miss A.	7	0
Miss L.	6	1
	19	3

It should be remarked that the three members of this family who lost the most children were not more delicate than the others, as might have been supposed had they been the three youngest of the family; they occupied the places 1, 3, and 6. The eleven children of M. A. all died of hydrocephalus at a very early age, one alone attained fourteen years. The six children which Mr. A. lost also died very young; the survivors are delicate. Of the three children lost by Miss C., one died at the age of fifteen days; a second, though delicate, attained the age of three years; the third died when twelve years old, of inflammation of the brain and its membranes.

A similar fact has been communicated to me by a justly esteemed professional brother.

In 1809, M., a merchant, in good health, married his niece, a robust and healthy girl. Eight children were the fruit of the marriage; of these, seven died before the age of four years of convulsions or hydrocephalus; the only survivor is a daughter, now thirty-three years old, who is very delicate, and whom I have been attending during several years with the view of moderating the severity of a *psoriasis diffusa* which has existed from her earliest infancy, and the existence of which, perhaps, saved her from the fate of her brothers and sisters.

We sometimes find ANOMALIES OF ORGANIZATION result from the marriages under discussion. There is at present in the clinical ward of the Hôtel Dieu a patient with a peculiar deformity of each foot. On the left side the great toe is united to the second, the third and fourth are united in the same way, the fifth is isolated. All the phalanges are perfect, the union being only by means of the soft parts. On the right side the toes are united in the same manner as on the left, only the phalanges have partly disappeared. This man tells us that his father and mother were first cousins.

In the case of the child of a man highly distinguished in chemistry, and who, contrary to the advice of his uncle, a man of great experience, had married his cousin-german, I found six toes on each foot.

The following fact is very remarkable; it is an example of a real endemic of *sexdigitism*, of an entire population, under the influence of the assigned cause, being affected with this anomaly. It was communicated to me by my learned friend Dr. Potton, who had an opportunity of visiting the locality and inquiring into all the circumstances.

There is in the department of the Isère, a little village called Izeaux, isolated, lost, so to speak, in the middle of a little-cultivated, almost barren plain. The roads in this inhospitable district being bad, communication with a distance was formerly almost impracticable. The inhabitants of Izeaux, nearly abandoned to themselves, having little intercourse with the surrounding population, constantly contracted marriages among themselves, and therefore frequently with their own relatives. About the end of the last century, as the result of this state of things, there had been engendered and was kept up a singular monstrosity, with which thirty-five or forty years ago almost the whole population was affected. In this village men and women had on their hands a sixth finger, on their feet a sixth toe. When in 1829, and again in 1836, said Dr. Potton, I observed this singular phenomenon, in some of them this deformity was already in only a rudimentary condition, in several there was only a large tubercle, in the centre of which, however, was a hard, osseous body; a species of nail, more or less formed, terminated this appendix, which was fixed in the external lateral aspect of the base of the thumb. The person who accompanied me, though having no knowledge of medicine, made me observe that a favourable change was in progress, that a marked diminution of this monstrosity had been taking place since the customs of the inhabitants had been modified by the force of circumstances and their material progress, since the roads had been improved, and communication with those at a distance had become more frequent, since marriages had been contracted among strangers, since, in a word, a crossing of the breed had taken place. In 1847 Professor Duvay saw a manufacturer, a native of this locality, who had married and settled in Lyons. He was the subject of the deformity alluded to, but was the father of four children, who were free from it. At present this pathological anomaly has almost disappeared from the village of Izeaux.

Congenital DEAF AND DUMBNESS is one of the most frequent results of the marriage of relatives. I have recently had six opportunities of noticing the coincidence. One of these is the following: A handsome, well-made woman called on me with her little boy, three years old, who had been deaf and dumb from birth; she was afraid that a similar misfortune would affect another son, four months old, who was completely deaf. In answer to my inquiries she stated that none of her relatives had been deaf, but that she had married her uncle. In another family of eight, where the parents were cousins-german, five were either

deaf from birth, or became so soon afterwards, the other three were the subjects of various bodily and mental infirmities.

Dr. Chazarain, in a thesis laid before the Faculty of Medicine of Montpellier, has brought together various facts which illustrate the same principle. From the position he held during several years in the Deaf and Dumb Institution of Bordeaux, he had peculiar advantages for investigating this point. Out of 39 boys in this institution, deaf and dumb from birth,

Were the offspring of relatives	. .	6
Among whom 1 had	. . . .	2 brothers deaf and dumb.
" 1 had	. . . .	3 " "
Total	. .	11

Of 27 girls deaf and dumb from birth, 9 were the offspring of relatives; of this number 6 had among them 7 brothers or sisters affected with the same infirmity, making in all 16. It will at once be seen that the number of the individuals belonging to the category of the marriages of relatives is increased by a half if the brothers and sisters affected in the same way are taken into consideration, whilst amongst those, the father and mother of whom were not related, there is barely a sixth to be added.

At present it is known that France possesses 29,512 deaf and dumb individuals. According to their distribution in the different localities it appears that the greatest number is found in the mountainous departments where means of communication are difficult. The department of Ariège has the highest figure, 161 to 100,000 inhabitants. We know that in Ariège the marriages of relatives are so frequent that the priests of that department have several times applied to the Faculty of Medicine of Montpellier to issue an authoritative reprehension of such unions. The faculty has no doubt been right in declining to do so, but the very request shows how important the matter was considered.—*Edin. Med. Journ.*, Jan. 1862, from *Gaz. Hebdom.*, vol. vii. No. 37.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

60. *Rupture of Heart by External Violence, without breach of Skin.*—Dr. J. H. Ward relates (*Med. Times and Gaz.*, Jan. 25, 1862) the following extraordinary example of this, which is interesting in a medico-legal point of view:—

"In the month of Nov. 1861, I was hastily summoned to a man, aged 26 years, whom my informant stated had shot himself with a pistol. On my arrival I found him extended upon a couch, dead, he having lived about ten minutes after the fatal shot was heard.

"When first seen, his shirt was on fire from the close proximity of the weapon when discharged, and his flannel vest was perforated. No external marks of violence were visible, except a slight mark on the skin beneath the left nipple, corresponding exactly with the opening in the vest. The mark was undoubtedly caused by the loop-end of a pistol-key, used for taking the firearm to pieces, which was picked up, along with the pistol, immediately after the report was heard. The hollow part or barrel of the key was partially filled with charred paper.

"Two days afterwards, I was requested by the coroner to make a post-mortem examination, which revealed the following singular facts: The features presented an unusually pale, even blanched, appearance; but besides this, and the mark on the chest already alluded to, there was nothing else of a remarkable character. On reflecting the integuments, the intercostal muscles between the fifth and sixth ribs on the left side, and underneath the external mark, were found to be perforated sufficiently to admit the finger; and on removing the sternum, the pericardium was found quite intact, but unusually distended. On cutting into the pericardial cavity, a considerable quantity of coagula and serum issued forth.

The heart was next carefully examined, and the left ventricle was discovered to be ruptured, longitudinally, to the extent of an inch on its anterior surface; in size, texture, and condition, the heart was perfectly healthy.

"It is remarkable that the skin was not perforated, no rib broken, the pericardium entire, and yet the intercostal muscles and left ventricle were perforated. The burning of the clothes, to a considerable extent, shows that the pistol was held close to the chest; and that what is technically called 'windage,' must have been considerable. In such cases the injury may be supposed to have been caused by a spent projectile. I am not aware that there is a parallel case on record. Many points of interest will occur to the students of forensic and military surgery; but I shall at present content myself with the above simple narration, only just pointing out, however, that though various records show that rupture of the heart takes place in the right ventricle almost three times as often as in the left, yet in this case the healthy structure of the left ventricle succumbed to the force.

"I may just add, in conclusion, that the heart was submitted to the Medical Section of the Royal Manchester Institution, at the December meeting of last year."

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61. *Poisonous Effects of Coal Gas upon the Animal System.*—Dr. C. J. B. ALDIS read a paper on this subject before the Royal Medical and Chirurgical Soc. (Jan. 14, 1862). The author was induced to make the present inquiry in consequence of the examination of gas, as to its purity, now forming an important branch of the public health. He also wished to ascertain whether Cannel gas destroyed life sooner than common gas, since this question had arisen at a recent coroner's inquest. The third and fourth objects were, to counteract, if possible, by publicity, the want of precaution often displayed by gas-fitters in the discharge of their duties, and to try means for their recovery when rendered insensible. The following are the results of some experiments made by the author, Mr. F. G. Evans, engineer of the Chartered Gas Company, and Mr. Bannister, assistant engineer at the works in Horseferry-road, Westminster, November 8, 1861: A rat was first killed by means of a sharpened file thrust into the brain, for the purpose of comparing the appearance of some of the internal organs with those of others destroyed by the gases. The eyelids were closed; the lungs collapsed, and of a whitish colour; both ventricles of the heart contained black coagulated blood. Six experiments were then made—two with Cannel gas, three with common gas, and one with foul gas—upon rats, which were placed, in succession, under an inverted glass vessel, into which the gases were passed through a $\frac{3}{8}$-inch cock and tubing with a $\frac{1}{2}$-inch bore. The animals soon began to gasp, and became insensible after slight struggling. They lay motionless for a few seconds, when death supervened upon convulsive movements. The eyes were open and projected. The outer surface of the skull was exceedingly red in all that were examined, and dark fluid blood escaped from them. The superficial vessels on the surface of the brain were pinkish, and some were empty; the substance of the brain was pale. The lungs were collapsed, and of a pink colour; the heart was distended with darkish fluid blood; and the abdominal veins were congested. The eyes of the rat exposed to foul gas did not project so much as in the other examples. On opening the body a strong smell of sulphuretted hydrogen gas escaped. The brain and lungs were much congested, and of a brownish colour; the heart was greatly distended with dark fluid blood, the auricles being nearly black; and the abdominal veins were distended with dark blood. On November 6, the author examined six rats killed at the works in the same manner as the last six just mentioned, all of which had died with their eyes open. The post-mortem appearances were similar. In remarking upon the physiological results of the experiments, it may be observed that death ensued from the combined effect of different coal gases, the chief constituents of which are, after purification, light carburetted hydrogen, hydrogen, carbonic oxide, carbonic acid, oxygen, nitrogen, and the condensible hydro-carbons; whereas the foul gas contained, in addition, ammonia and sulphuretted hydrogen. Again, Cannel coal gas contains more hydro-carbon vapours than common gas, for which reason it probably destroyed life more quickly than the common

gas. The Cannel gas supplied by the Chartered Company is made with a mixture of Bog-head and Newcastle coal; while the common gas is made from Newcastle coal, enriched with a small percentage of Wigan Cannel. The impurities of common Newcastle coal gas, according to Lewis Thompson,[1] may be taken at ½ part of ammonia, 8 parts of sulphuretted hydrogen, and 25 parts of carbonic acid in every 1000 measures of the gas. Dr. R. D. Thomson[2] gives the following analysis of London gas: Olefiant, 3.86 per cent.; carburetted hydrogen, 38.93; hydrogen, 46.43; vapour of water, 2.48; carbonic acid, .46; carbonic oxide, 5.62; nitrogen, 2.22. While testing the gases from the Chartered Company with Cooper's tube, which may be considered merely as an approximation to the truth, the author found that the common gas contained about 1 to 2 per cent. of carbonic acid, 4 to 5 per cent. of hydro-carbon vapours, ½ to 2 per cent. of carbonic oxide; but the Cannel gas contained, of carbonic acid, from 1 to 1½ per cent.; carbonic oxide, ditto; hydro-carbon vapour, 12 per cent. On a post-mortem examination of five bodies of persons, quoted by Dr. Taylor in his work on *Poisons*, there was congestion of the brain and its membranes, the pia mater gorged with blood, and the whole surface of the brain intensely red, and the blood coagulated. In two other cases there was congestion of the brain, but the blood was remarkably liquid. The effects, however, produced by the coal gas were owing to its long-continued respiration in a diluted state, which may account for their difference, when compared with the results of the above experiments. In these the blood of only one rat was loosely coagulated in the left ventricle of the heart. The brain also of all, excepting that killed by the foul gas, were free from congestion. Mr. William Bloxam, jun., has kindly favoured the author with notes of a case of poisoning by coal gas. The deceased was found on the top of a pair of steps, in a closet, in a sitting posture, his head on one side, his arms hanging down and his back leaning against the wall. (He was connecting a meter.) It is worthy of remark, that he did not appear to have ever attempted to descend from the steps.

Autopsy, twenty-four hours after finding the body.—The blood everywhere was fluid; the brain and membranes by no means congested—rather pale than otherwise; the lateral ventricles contained much pale serum; no coagulum in the corpus striatum, optic thalamus, crus cerebri, cerebellum, nor other position. The brain and cerebellum apparently healthy. *A powerful odour of gas* on opening the cranium, and slicing the brain down to the corpus callosum. The lungs did not collapse on raising the sternum; and the cartilages were dark red—darker at the back of the lobes (from gravitation of blood); the tissue healthy. The trachea and bronchi contained frothy mucus in some quantity. On securing a bronchus, removing lung, and collapsing by pressure, *a very strong odour of gas was perceived.* Right side of the heart distended—left nearly empty; blood black everywhere; heart healthy; no signs of irritation or disease in the abdominal viscera; congestion of the abdominal venous system. The author suggests that the deceased committed an error of judgment, which is too frequently the case, while adjusting the meter; for it appeared from an inquiry at the works, that he had connected the pipe with the meter first, instead of with the pipe from the main, which latter he was effecting with a running socket, so imperfectly united that sufficient gas escaped to destroy life. It will be evident that, as he was working with his head at the upper part of the closet on a level with the fanlight of the door, he should have been doubly cautious; for when the gas escaped, this part became a kind of gas-holder, and the deceased, having become insensible, was unable to lower his head beneath the frame of the fanlight, or had he but struggled and fallen, his life might have been spared. In numerous instances gas has appeared to act like an anæsthetic agent, by rendering the men while at work comatose, many of whom, when removed into the fresh air, gradually recover. They complain generally of a pricking sensation, resembling that from pins and needles; there is stupor, with violent headache, giddiness, nausea, and sometimes vomiting. The countenance is puffy and livid, being of a dark, bluish-black colour; they look tipsy, and are obliged to be led, their legs giving way from under them; and the breath smells strongly of gas.

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[1] Chemistry of Gas-Lighting, p. 34.

[2] Evidence on Gas (Metropolis) Bill, 3523, June 29, 1860.

The author made some further experiments with Mr. Bannister on December 11, which were conducted in the same manner as the preceding, except that the animals were rendered insensible only, and four were afterwards exposed to fresh air; but the others to the action of ammonia and fresh air. Another experiment was made on December 13, when a rat was rendered insensible by means of common gas, and afterwards passed through water into a large glass vessel filled with oxygen. From these experiments it appeared that the animals recovered more quickly when exposed to fresh air than when other means were adopted.

Dr. BARNES related a case of poisoning by coal-gas. The patient was found perfectly insensible, and lying on his back. His countenance was of a dark, livid, leaden colour. He applied ammonia to the nostrils, and administered some to the mouth, the patient recovering on being exposed to the open air. The blue colour present in this case was much more striking than that observed in cases of poisoning from chloroform.

Dr. MARCET observed that it would be of interest to determine which were the constituents of coal-gas possessed of poisonous properties, and to ascertain their mode of action. He reminded the Society of the extremely dangerous nature of carbonic oxide—a substance constantly present in purified coal-gas; and alluded to a case of Dr. Taylor's reported by the author of the paper under consideration, when—if he (Dr. Marcet) had not misunderstood Dr. Aldis's statements—after death from the inhalation of coal-gas, the blood was found red in the vessels of the brain—an obvious indication of the fatal effects resulting, in this instance, from the action of carbonic oxide; otherwise that blood would have exhibited a dark venous colour. Dr. Marcet believed the hydro-carbon (light carburetted hydrogen and olefiant gas) constituents of coal-gas acted very differently from the carbonic oxide. Carbonic oxide produced death by altering the properties of the blood-corpuscles, a fact discovered by Professor Bernard; the inhalation of light carburetted hydrogen and olefiant gas gave rise, in all probability, to symptoms of anæsthesia, as would result from chloroform, only causing death when in a concentrated condition—namely, by paralysis of the muscles of respiration, or by cardiac syncope. He also thought fatal effects from the inhalation of gas may be due in some cases to asphyxia from spasm of the glottis, and offered several arguments in favour of this view.

Dr. ALDIS remarked that the term "asphyxia" was often loosely applied to cases of death from coal-gas, as if it resulted from the mere absence of air; whereas he believed, from the symptoms which followed the inhalation of coal-gas, that the system became affected by a sedative poison. Great negligence was too frequently displayed by gas-fitters while discharging their duties, whereby the public health and property were jeopardized; but he was glad to mention that, in consequence of the great fire which had occurred in Wood Street, and other accidents, Mr. Simmons, of New Palace-yard, had invented a gas-connecter. He had seen the machine in operation, and could say that it was easily managed, and safer than the old plan of cutting a hole in the main. It was provided with a drill and valve, which, by preventing the escape of gas, rendered the instrument both economical and safe, the men being able to work without risk to life and destruction of property.—*Med. Times and Gaz.*, Feb. 1, 1862.

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62. *Detection of Nicotine in the Viscera of a Snuff-taker.*—M. MORIN has examined the liver and lungs of a determined snuff-taker who died aged 70. The organs, cut up into little pieces, or triturated in a mortar with powdered glass, were brought into contact with distilled water acidulated by some drops of sulphuric or of oxalic acid. After several days, the liquid was filtered through paper devoid of carbonate of lime and reduced to one-third by ebullition. As it became thus concentrated, flocculi were produced and deposited. Thus reduced, it was filtered again and pure alcohol was poured on to it that gave rise to other flocculi, which were separated by filtration. When the alcohol had been driven off by evaporation a slight excess of pure potassa was added to the residue. After cooling, this mixture was agitated with sulphuric ether, which was decanted after some hours and evaporated in a pneumatic machine. The residue presented the irritating odour and acrid flavour of nicotine, and comported itself just like that substance with various reagents.—*Med. Times and Gazette*, Jan. 11, 1862, from *Presse Belge*, No. 51.

AMERICAN INTELLIGENCE.

DOMESTIC SUMMARY.

Transplantation of Skin for the Relief of Contraction from a Burn.—Dr. Cabot showed to the Boston Society for Medical Improvement (Feb. 10, 1862), a little girl seven years of age, on whom he had performed this operation with entire success.

Three years ago, her clothes caught fire, and she was severely burned about her right hand and arm. At her entrance to the hospital, Dec. 13, 1860, there were extensive cicatrices over the greater part of the arm, which was flexed to its utmost, and could be but slightly extended on account of a dense, firm cicatrix, occupying the anterior part of the limb to an extent of three inches below and the same distance above the elbow. Dec. 22, the cicatrix, where it ascended in a point upon the front of the biceps muscle, was dissected up after two cuts had been carried down on each side of it, between it and the sound skin. The arm was extended as much as possible, carrying the V-shaped cicatrix with it, and the sound skin was brought together across the surface thus laid bare, and retained by iron wire sutures. There was some motion gained by this operation, though not very much. On Feb. 2, 1861, a pointed flap of skin was dissected up from the lower part of the chest and upper part of the abdomen, and the bands of cicatricial tissue having been divided in the bend of the elbow, so that the arm could be fully extended, into the surface thus laid bare the pointed piece of skin was secured by a few stitches, and the arm having been enveloped in cotton, was bent at a right angle and secured to the side. The extreme point of the flap sloughed, but the remainder united perfectly. The operation was completed by continuing the dissection of the skin from the trunk in a V shape, like the first, only having the point in the opposite direction, so that the whole formed an elongated lozenge; and the bands on the inner aspect of the joint having been divided, and the arm extended, this flap was secured like the first, though of course the arm was no longer secured to the side. The union of this flap was perfect, without any sloughing, in a short time. Subsequently, a subcutaneous band was divided with a tenotome, and the patient left the hospital, May 20, with almost perfect use of the arm.

Dec. 14, 1861, she again entered the hospital for the relief of a slight contraction, resulting from the sloughing of the apex of the first flap. This was accomplished by an operation similar to that by which the first slight relief was gained, and she now has the perfect use of her arm.

An interesting feature in the case is, that sensation began in the flap at the point where union first took place, at the angle opposite the pedicle, and gradually spread towards the pedicle, which part was for a long time insensible. The sensation was never referred to the part from which the flap was taken, but always to the arm.—*Boston Med. and Surg. Journal*, Feb. 27, 1862.

Compound Dislocation of the Tibia at the Ankle Joint, with Compound Comminuted Fracture and Dislocation of the Fibula.—Dr. S. L. Wiswell, of Cabot, Vt., relates (*American Medical Times*, Jan. 25, 1862) the following case of this, in which he was fortunate enough to preserve the limb.

"Mr. J. W., aged 53, on the 19th of June, 1861, after falling from a frame a distance of ten or twelve feet, was struck with a heavy piece of timber on the right leg, a short distance above the ankle. On examination of the injured parts shortly after, the articulating surface of the tibia was found driven through an opening four and three-quarter inches in length; the fibula fractured at the distance of four inches above the joint, also again at the distance of one inch above,

and the tissue between the points of fracture so injured, that sloughing resulted a few days subsequently, leaving a wound three and three-quarter inches in length, and some three inches in width. The principal arteries escaped injury. I decided to save the foot, if possible, and, having reduced the dislocation and placed the limb in its proper position, I prepared myself to combat the constitutional disturbances that I knew must arise. The case was watched with no little anxiety, and remedies administered accordingly. For the first ten days the pulse was kept below 100 by the judicious use of veratrum viride. Patient was slightly delirious at times for the first two weeks. Yeast and charcoal poultices were freely used until all danger of mortification was passed, and creasote was added to the poultices so long as any antiseptic was deemed necessary. As may be supposed, the discharge of pus and purulent synovia was abundant; to guard against the bad effects of which, bark and wine were liberally administered. The hypophosphites of lime and soda were also given, with the apparent effect of increasing the appetite.

"The various mechanical contrivances made use of to contribute to the patient's comfort, and keep the foot in place, were by no means peculiar, and consequently need not be described. After three weeks, he was in a fit condition to be removed to his home, a considerable distance; the limb being carefully bandaged and supported. During the six months that have elapsed since the injury, several small pieces of bone have been removed, and from the present appearance of the limb I feel justified in predicting a good limb. Of course amputation, if it had resulted favourably, would have saved much time; but I imagine that no surgeon, in these good days of conservatism, would be willing to say that I purchased the limb at too dear a cost."

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Complete Inversion of the Uterus with an Adherent Placenta, following a Natural Labour.—Dr. O. N. ELLIS, of Dresden, Ohio, records (*Ohio Med. and Surg. Journal*, Jan. 1862) the following example of this:—

On Monday, May 6, about one o'clock P. M., was called to see Mrs. R. G——, æt. 26, a woman of sanguineo-lymphatic temperament, in her third labour. Made an examination per vaginam; found the os uteri dilated to about the size of a quarter dollar. After a few moments conversation with the patient, and some charges to the attendants, I left her room, and did not see her again until four o'clock of the same afternoon. During this interval the labour had progressed rather slowly, owing to the rigidity of the parts, and, knowing her previous history, did not think of anything else than a tedious labour. The pains, however, grew more marked and distinct in the course of half an hour afterward; and at about half past five o'clock, four and a half hours from my first visit, a healthy female child was born. The woman was not fatigued, was in good spirits, and conversed freely with her attendants. Soon after the birth of the child, not to exceed a quarter of an hour, she began to have strong expulsive pains accompanied with some hemorrhage, though not to exceed the usual quantity. They continued for a short time, appearing at longer intervals, and finally ceased altogether. I now made a thorough examination of the interior of the uterus; found its walls patulous, the placenta at the fundus, very large in size, and very hard to the touch. The usual "ready remedies," friction over the utero-abdominal surface, cold applications, etc., were used, but with no effect; and from the very alarming nervous prostration, and request of the patient, I sent for counsel. Drs. Cass and Lemert came promptly to my assistance. Teaspoonful doses of wine of ergot were administered at intervals of ten minutes, sufficient to quicken the contractions, with friction over the abdomen. Strong contractions now came on. The uterus could be distinctly felt as a round, hardened mass; but at the fundus little or no contractions could be felt during a pain. But a short time had elapsed from the administration of the third dose of ergot, and whilst my hand was on the abdomen, I felt the uterus contract suddenly, and as suddenly glide from under my hand. Upon examination, the cavity of the vagina was found filled, and a substance supposed by us all to be the placenta. Following this, alarming prostration seized the patient, "feeling," as she described it, "as if she was sinking through the bed." Stimulants were now promptly administered, but with little or no effect. Upon examination, a mass resembling

a large piece of *boiled liver* in colour, but very hard in consistency, was found protruding entirely from the vagina. The umbilical cord was attached to the centre of this carnaceous mass, being very large and soft. As the parts relaxed the tumour increased in size, but no membranes could be found upon or about it. There could be no doubt now as to the case being one of complete inversion, as the broad and round ligaments could be felt just behind the protruding tumour. With great difficulty the placental mass was separated from the uterus, which was immediately replaced, contracting, upon itself, to the natural size, with the removal of the hand. All our efforts were now directed to the sinking condition of the patient, but she failed to rally, and died at nine o'clock of the same evening.

Dr. E. states that "at no time was any force applied at the cord."

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Wound of the Eye; Extirpation of the Organ; followed by Fatal Tetanus. —Dr. E. Williams records (*Cincinnati Lancet and Observer*, March, 1862) a case of wound of the eye by a large scale of iron, which flew off from a boiler while the patient was hammering upon it. Dr. W., convinced that there was in the eye a foreign body, wished to remove the organ, but the patient obstinately refused, and only consented three weeks after the accident, his sufferings in the meantime being very intense. Dr. W. enucleated the eye on the 24th of April; the patient went on well until the third evening after the operation, "when he began to experience some rigidity about the muscles of the jaw, and difficulty in swallowing. The following morning all the muscles on the right side of his face were perfectly inactive and flabby, while those on the opposite side were rigidly contracted, giving the patient the peculiar physiognomy of facial paralysis. He could still open the mouth about half an inch and swallow, but with labour. The tetanic contraction invaded successively the muscles of the neck, chest, abdomen and limbs; and he died on the morning of the 5th of May, one month after the accident, ten days after the operation, and seven days after the tetanus set in.

"On inspecting the eye, I found the retina destroyed by the suppuration, excepting a small floating portion around the optic entrance—choroid thickened and friable from the presence of lymph in its tissue—iris discoloured, swollen, and pushed forward against the cornea, pupil closed by a plug of yellowish lymph, lens turbid, very soft, and much diminished in size. Behind the iris, and moulded to its posterior surface and the inner surface of the corpus ciliare, was a mass of lymph, yellowish in colour, pretty firmly adherent to the surfaces from which it had exuded, and filling up nearly the anterior half of the cavity of the eye. This mass of lymph, permeated with numerous pus globules, was thickest and extended farthest back at the outer side of the eye, where I found just back of the equator a large scale of iron sticking firmly in the sclerotic. It was, by actual measurement, half an inch long, one quarter of an inch wide, and a little thicker than ordinary foolscap paper. Its surfaces were smooth, but the edges rough and irregularly serrated. Near the middle of its length were two corresponding notches, one on either side, in which it was firmly embraced by the sclerotic coat, one-half projecting into the orbit, and the other into the eye. It had passed through the globe, and half way out on the opposite side. In this position, the offending body was held so firmly that I had to enlarge the wound in the sclerotic with the scissors, in order to extricate it."

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New Operation for Obstinate Strabismus. By E. Andrews, M. D.—"Certain cases of strabismus have always been considered incurable: among which are those which result from rupture of the external rectus oculi muscles, and those which are produced by a wound or injury within the internal angle of the lids, fastening the eye by a cicatrix. Yet there occur instances of this sort where the cure is of the utmost importance. Such are those where the sound eye happens, subsequently, to be ruined, while the strabismic one is so turned inward as to be rendered practically useless for supplying its place. In such case the patient is actually in the condition of a blind man, though having one eye perfect in everything but position. Having two such cases on hand, I resolved to try a new operation on one of them. The external rectus muscle had been ruptured, allowing the cornea to turn toward the internal canthus so far as to be

quite out of the reach of vision. Some surgeon had made an ineffectual operation on the old plan, the only result of which was to form a cicatrix, which glued the eye more firmly into its faulty position.

"Having administered ether and chloroform, I commenced, as in ordinary operations for strabismus, by cutting the conjunctiva on the inner side of the eye with the scissors; then, with a blunt hook, I picked up successively every band of cicatrix, tendon or fibrous tissue which interfered with the motion, and cut them off with the scissors until the globe could be freely turned outward, by seizing it with forceps and making traction. The eye was thus liberated from the bond, but as there was no external rectus, there was no voluntary power of keeping it to its place. I proceeded therefore as follows: Pinching up the conjunctiva on the outer side of the globe with the rat-tooth forceps, I cut it perpendicularly with the scissors, two lines from the cornea; commencing at the slit thus made, I dissected off the conjunctiva oculi from the slit outward quite to the lining of the lids at the external angle, denuding the inside and edge of the external canthus at the same time. I then took a silver ligature, bent in the form of a staple, and passed the two ends, first through the strip of conjunctiva remaining next to the cornea, and then through between the eyeball and external canthus, bringing them out through the skin at two points near the external border of the bony orbit. By drawing upon them, I rolled the eye well out, so as to press the cut edge of the conjunctiva against the denuded canthus, and then fastened the wire by a lead button. In this way the eye was secured firmly in a correct position. Some inflammation followed, which was readily held in check by cold water dressings. On the sixth day the suture was taken out, when the eye was found to maintain its correct position, and the operation proved a complete success.

"From the results of this experiment, it is obvious that some cases of strabismus which have hitherto been considered incurable, are capable of being rectified, and that this operation may restore useful vision to a class of patients which had been given over to virtual blindness, by the faulty position of the remaining sound eye."—*The Chicago Med.-Examiner*, Jan. 1862.

[We regret that the above case has been so briefly reported, and so many important details are omitted. It is not stated by what accident the external rectus muscle was ruptured without a like lesion of the coats of the eye; what degree of vision the patient enjoyed after the operation; whether or not the eyeball was motionless; what degree of exophthalmos resulted, &c. &c., all important points in forming an estimate of the benefits resulting from the operation. Such cases must be extremely rare.

Our western exchanges furnish evidence that we have enterprising ophthalmic surgeons in this country who can rival their Teutonic and Gallic brethren in wonderful—we might perhaps say miraculous—achievements.]

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NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Andrews, J. Charles	Pennsylvania.	Opium.
Angle, John S.	Pennsylvania.	Strumous Ophthalmia.
Applegate, Joseph W.	Indiana.	Scarlatinous Albuminuria.
Baldwin, Louis K.	Delaware.	Circulation of the Blood.
Barnes, Ira Norton	New Hampshire.	Acute Pleuritis.
Barton, J. Hervey	Pennsylvania.	Mitchella Repens.
Bates, John William P.	Maryland.	The Health of American Women.
Beane, William H.	Pennsylvania.	Puerperal Convulsions.
Berg, J. Frederick, Jr.	Pennsylvania.	The Student of Medicine.
Blaydes, James E.	Tennessee.	Inguinal Hernia.
Bower, Henry J.	Pennsylvania.	Asthma.
Brooks, Edward	New York.	The Intellectual Operations.
Burg, S. Wesley	Pennsylvania.	The Young Doctor.
Burnett, Joshua U.	New Brunswick.	Is Cholera Contagious?
Cantrell, William A.	Pennsylvania.	Erythroxylon Coca.
Carroll, Thomas	Pennsylvania.	Circulation of the Blood.
Conklin, Gustavus	Pennsylvania.	Acute Pneumonia.
Cook, William Harvey	Pennsylvania.	Reflex Action of the Spinal Cord.
Duffell, Charles L.	New Jersey.	Physiology of Death.
Edwards, James L.	Illinois.	Typhoid Fever.
Fitch, Pelatiah	New Jersey.	Signs of Pregnancy.
Gast, John Reynolds	Pennsylvania.	Obstruction of the Bowels.
Girvin, Robert M.	Pennsylvania.	Acute Bronchitis.
Graham, Samuel	Pennsylvania.	Conjunctivitis.
Grant, John	Nova Scotia.	Measles.
Hayes, Joseph H.	Pennsylvania.	Pertussis.
Healy, James	Kentucky.	Typhoid Fever.
Hidden, William Buffet	New Hampshire.	The Responsibilities of the Physician.
Hoffman, Christian N.	Pennsylvania.	Peritonitis.
Keen, William W., Jr.	Pennsylvania.	The Circulation as affected by Pressure.
King, Cyrus B.	Pennsylvania.	Scarlatina.
Knipe, Jacob O.	Pennsylvania.	Dyspepsia.
Lane, Edward G.	Dist. of Columbia.	Diagnosis.
Lewis, Edward C.	Ohio.	Peritonitis.
Litz, Jefferson	Pennsylvania.	Amenorrhœa.
Marchand, James I.	Pennsylvania.	Veratrum Viride.
Marchand, William King	Pennsylvania.	Acute Pneumonia.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
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Maury, Frank F.	Kentucky.	Inflammation.
McClung, Leigh	Ohio.	Menstruation.
McCormick, S. Carson	Pennsylvania.	Cholera Infantum.
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Porter, George L.	Pennsylvania.	Tetanus.
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Tennessee	1
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